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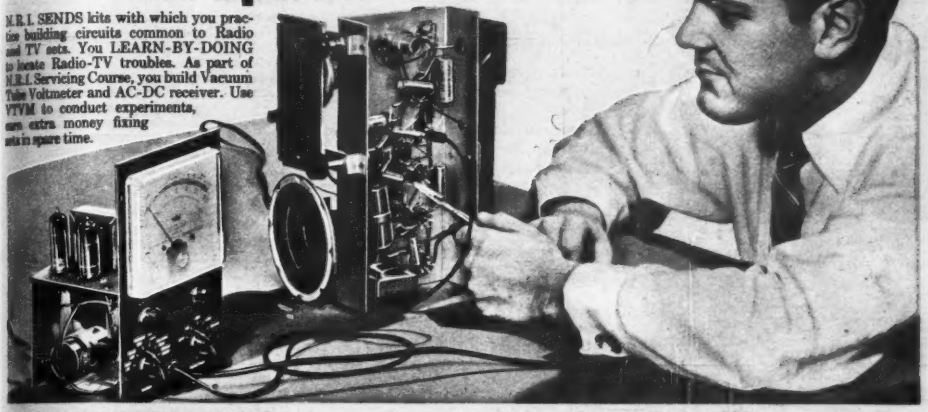

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Page 59

Page 87

Page 104

SPECIAL FEATURES

Dream Car Come True 59
English Channel Tunnel At Last? ..... *Frank Tinsley* 62
Mr. Colt's New Rifle ..... *Robert Hertzberg* 74
Home-Made Rockets Blast Off 87
How To Stop Snoring ..... *Lester David* 90
Make Your Son's Bike Safe 98

TOM McCAHILL

Mail For McCahill 53
Tests The '58 Plymouth Suburban 78
Tests The '58 Cadillac 82

REGULAR FEATURES

Mimi 67
MMI: B-I-G Profits From B-I-G Shoes ..... *William Macfarlane* 68
It's New! 70
Eye Stoppers 86
Inventions Wanted! 95
Hunting & Fishing: Spinning For Big Trout ..... *Wynn Davis* 96
MI's Bright Idea Award: Electric Socks 100

SHORT FEATURES

Little Toot—The Winner! 66
Smallest TV Station 76
A New Angle—Round Homes! 92
Ford's 25,000,000th V8/Novel Water Ski Launcher 94

DEPARTMENTS

Science Shorties 14
Invention Clinic 18
Dear Editor 22
Patents Granted 31
It's Coming! 166
Speaking of Jobs: Tire Sculptress 167
Help Wanted 183

(CONTINUED ON PAGE 6)

APRIL 1958

VOLUME 54, NUMBER 4

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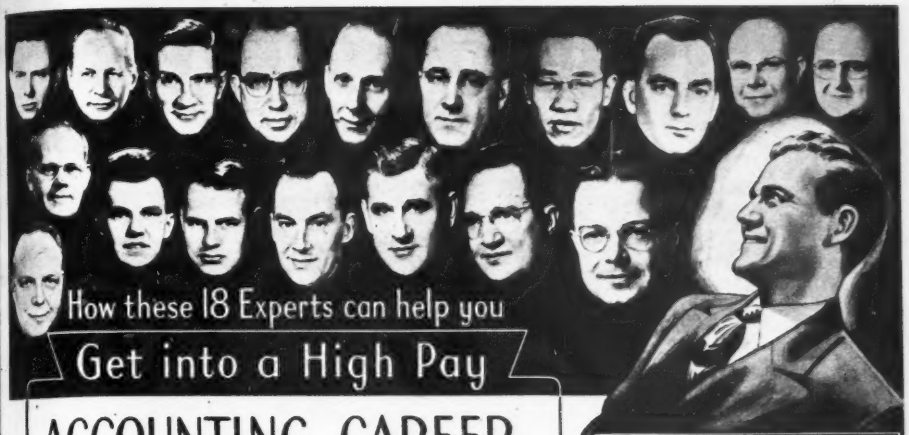

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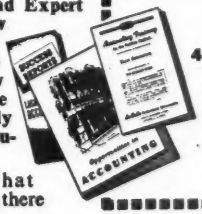

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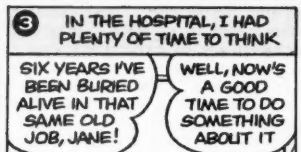

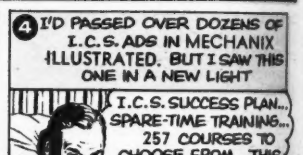

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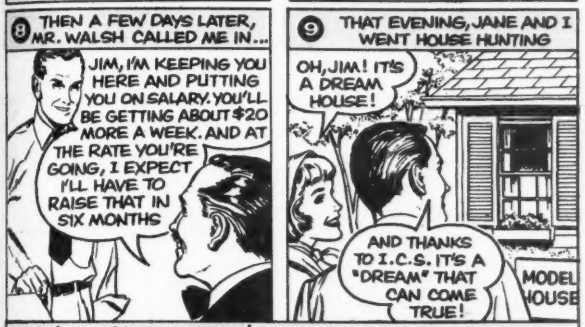

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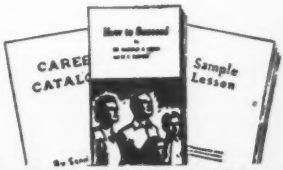

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continued from page 2

SPECIAL BOATING SECTION

Tom McCahill's Fabulous Cruiser 101
Here's Amanda—The Fun Boat! 104
"Less Than The Cost Of A Car" 106
Boats Less Than $2500 112
New For The Boatman 120

SPECIAL FEATURES

How To Make Your Garden Grow 124
TV At The Beach—Or Anywhere! 130
Need A Cornice? 132
Pliers 140

PAINTING

Fresh Paint Tips 145

EVENING PROJECT

Trash Scoop 37

AUTOMOTIVE

You Got Cockeyed Wheels? 152

ASTRONOMY

Silvering 158

DEPARTMENTS

What's New? 33
MI's Hardware Store 134
Golden Hammer Award Winners 136
Shop And Auto Shorts 138
Monthly Photo Contest 156

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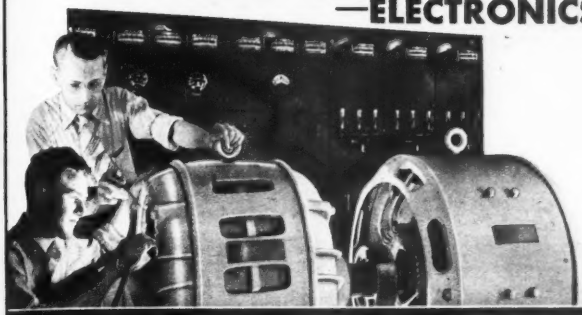

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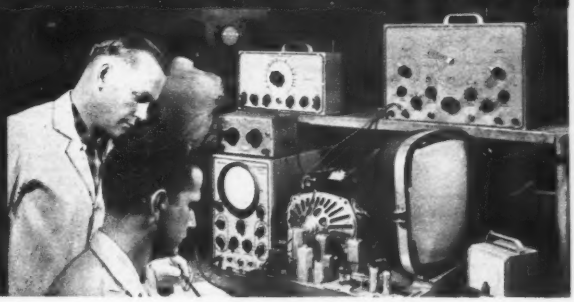

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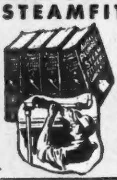

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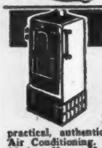

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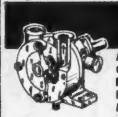

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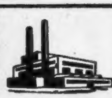

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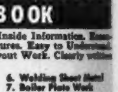

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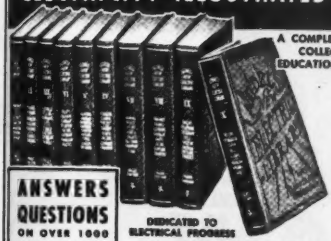

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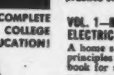

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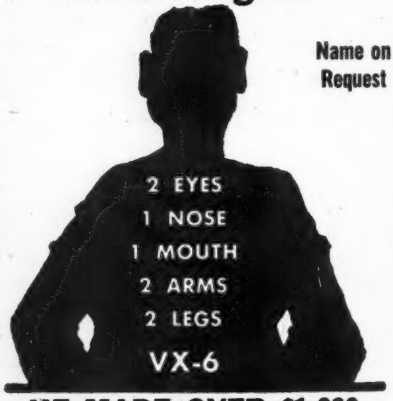

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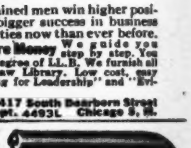

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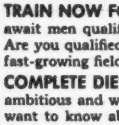

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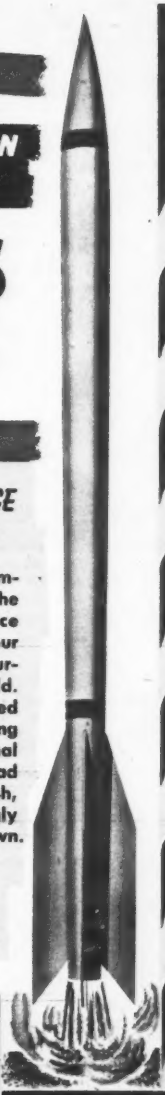

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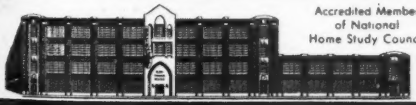

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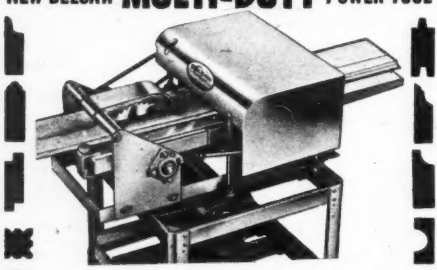

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More than half of the U. S.'s total land area is devoted to livestock production.

In 1956, 27,000 men, women and children lost their vision in the U. S.

Lizards apparently immune to bullets have been found in Cuba—one lived with as many as 22 shots in its body.

The difference between a well-painted and badly-painted ship may mean half a knot in speed for the same power.

The Pentomic army platoon of 1960 will have an 18-pound transistor radio with four pre-set channels for instant communication with nearby units.

The 1956 accident toll cost Americans an estimated $11,000,000,000.

Annual sales of bird cages may now run as high as $12,000,000 to house an estimated 14,000,000 parakeets and some 4,000,000-5,000,000 canaries.

A TV film has been developed which can be processed in 60 seconds.

Three times as many men as women commit suicide in the U. S.

A portable electric hammer that strikes 1,600 blows a minute has been developed.

To put a 20-inch diameter sphere weighing 21½ lbs. into an earth-circling orbit will require a 72-foot rocket weighing 10 tons, or about 1,000 pounds of vehicle per pound of satellite delivered.

The U. S. now has more than 1,000 uranium mines in operation. •

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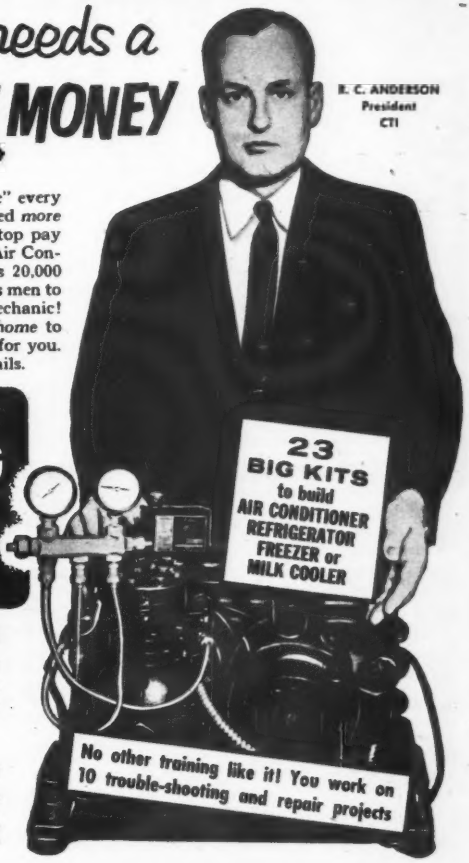

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by practicing at home with real equipment!

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You train at home in spare time. CTI sends you 23 big kits of parts and tools. You assemble a commercial-type, heavy-duty, ¼ h.p. refrigeration high-side (illustrated at right.) Then you build an air conditioner, refrigerator, freezer or milk cooler. All equipment included with training! No extra cost.

You Get Kits Like These

At left is photo of tools included in just one kit. You get other tools, tubing, much equipment. Kits are sent on a planned schedule so that you learn in easy stages. You learn fast, too!

In another kit (right) you get motor, fan, pulley, service tools. Kits develop skill, let you get experience, eliminate years of low-pay apprenticeship.

Add to Your Income by Earning Cash as You Train

CTI training is practical, just like working on actual jobs. Like other students, you'll want to do repair work for profit soon after starting. Many students pay their tuition this way, add to their incomes, even get started in a business. Get the facts about this. *Mail coupon.*

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This substance is now available in *suppository* or *ointment form* under the name *Preparation H.** Ask for it at all drug counters—money back guarantee. *Reg. U. S. Pat. Off.

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INVENTORS

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A patent gives the inventor the exclusive right to prevent others from making, using, or selling the invention claimed in the patent for a period of seventeen years.

The Patent Laws were enacted for the benefit of the inventor to give him protection for the features of his invention which are patentable. These features must be properly and concisely set forth and claimed in a formal application for patent, in order to comply with the requirements of the Patent Laws. For that reason, unless the inventor is familiar with patent matters, he should engage a competent registered patent attorney or agent to represent him. We are registered to practice before the U. S. Patent Office and are prepared to serve you in the handling of your patent matters.

A specially prepared booklet entitled "Patent Guide for the Inventor", containing detailed information with respect to patent protection and procedure, together with a "Record of Invention" form will be promptly forwarded to you without obligation upon request.

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Invention Clinic

Joseph H. Kraus

In this column each month Mr. Kraus will answer as many letters as space permits on those subjects he feels to be of widest general interest. Time does not allow him to reply to any letters except those printed here. Address your questions to the Invention Clinic, *Mechanix Illustrated*, 67 West 44 St., New York 36, N. Y.

Outboard Motor Test Tank

John E. McLarney of Chicago, Ill., says that "we" have applied for a patent on an outboard motor test tank in which it is possible to test even 60 hp motors and, by means of a special device, to load an engine to simulate actual running conditions. How can they arouse the interest of the public and outboard motor manufacturers?

How many people do you think would be willing to purchase your test tank? Where would manufacturers use it and how many would be purchased? It seems to me that the place to sell this equipment is to outboard motor repair shops, testing stations, racing enthusiasts and the like. You don't give the price for the complete test equipment, nor tell exactly what measurements can be made. You should have some good photographs made, then send them together with complete engineering testing data to magazines which might be interested in telling your story. A good public relations man could help you here. This might prove to be a good invention.

The Growth of Industrial Arts

Jack W. Stage, M.D., Buffalo, N. Y. (and others) state that they wrote to the U.S. Patent Office for information about a book to which we referred in Nov. '57 MI and were advised that the Patent Office was unable to locate a copy of it.

This book, The Growth Of The Industrial Arts, was available from the Superintendent of Documents, Washington, D.C., around 1892. It is a collector's item today. As a result of our reference to this book, the U.S. Patent Office has had a great many requests for copies. It reports that there is only one copy in its library. So do not write the Patent Office or the Superintendent of Documents for this book. Instead, check around in stores dealing with rare books, or visit a library which may have it.

Life Saving Device

Amos L. Craft of St. Petersburg, Fla., sends patent drawings and specifications for a collapsible life preserver which should prove stable, unsinkable and protect you against fish. It has space for storage of food and medical supplies. What is our opinion?

You certainly seem to have gotten yourself involved in a lot of wishful dreaming which you have tried to support with scientific inaccuracies. First you stress the idea of producing the device from plastics, totally discounting the fact that it would be lighter if made from metal and might be constructed to closer tolerances and at a much lower cost per unit. Your diagram shows a rectangular shape, yet a round shape might be better and

[*Continued on page* 20]

INVENTOR'S TIP OF THE MONTH

Tires with reinforced chains are from 35 to 151 per cent more effective than non-chained tires over snow and ice. By comparison, snow tires are from zero to 20 per cent more effective than regular tires, according to a National Safety Council report. What is needed is an inexpensive device which will allow even a woman to easily put on and take off the chains for a car.

INVENTORS

If you believe that you have an invention, you should find out how to protect it. The first step is to have a search made of the prior pertinent U. S. patents. If a report on this search indicates that the invention appears patentable you can apply for a patent, and the specifications and claims should be prepared.

The firm of McMorrow, Berman & Davidson, with offices in Washington, D. C., is qualified to take the necessary steps for you. We can make a preliminary search on your invention, advise you whether we think it can be patented, and prepare your application for patent.

Unless you are fully familiar with the U. S. Patent Laws, we recommend that you engage the services of a Registered Patent Attorney to protect your interests. The patent laws are *your* laws. A patent gives you the right to prevent others from making, using or selling the invention claimed in your patent for a period of 17 years.

Use these patent laws for your protection. Investigate whether your invention can be patented. If you have what you believe to be an invention, we suggest that you have this firm make a search for you.

Send for a copy of our Patent Booklet entitled "How To Protect Your Invention," containing information about patent protection and patent procedure. Along with this we will also send you an "Invention Record" form, for your use in writing down and sketching details of your invention. We will mail them promptly. No obligation. They are yours for the asking.

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[*Continued from page* 18]

much less expensive. You suggest a helium compartment which our calculations show might give you a three and two-thirds ounce lift. If the person using it is instructed to throw away his shoes, he would make the preserver much lighter than will your helium compartment. The person within your preserver is almost completely under water all the time.

You mention ease of rest or sleep in comparative comfort and safety. Your only safety is against man-eating fish; there is little comfort in being water-soaked, possibly for days. You cannot put on this life preserver and jump overboard without danger of breaking your bones and bruising your skin. Furthermore, your preserver will take at least four times as much space as an ordinary preserver.

Yet there are some features which should make this interesting enough to encourage you. A stack of these life preservers released from a sinking ship might provide considerable life-saving potential. A change in shape, or in materials of construction, might make your device economically sound. Next you will need to make a model, test it, then have it approved before it can be used by any ship at sea. Only then will you be able to interest a manufacturer.

Underwater Swimming Mask

Louis A. Webber of Lincoln, Neb., has applied for a patent for an underwater swimming mask which eliminates so-called tunnel vision, hence lessens neck fatigue. What is our opinion of its possibilities?

Skin divers probably would like this design. We advise that as soon as you get it into production you try to get wide distribution as quickly as possible. There is no proof that you would not have been scratched by a coral rock had you been using your mask. When you are intently watching one thing, as you were, you may miss other things happening in front of your nose. The magician often capitalizes on this knowledge of human behavior.

Divining Rods Again

W. J. McMaster of Chicago, Ill., says that part of his job is to locate boxes that cover roadway control valves for water supply to

[*Continued on page* 24]

INVENTORS

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Unless you are familiar with these matters, you are advised to call upon the knowledge, experience and skill available to you from a registered patent attorney or agent in order that the patent, if obtained, will adequately protect your invention.

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Let us send you a copy of our instructive booklet "Patent Protection for Inventors" which explains pertinent points concerning procedures which must be followed and how this firm acts in your behalf. We also will send "Evidence of Invention" disclosure form (with instructions for proper use) to help you take the first step toward securing a patent—a search among previously granted U. S. patents for similar types of inventions to determine probable patentability. Booklet and form sent without obligation.

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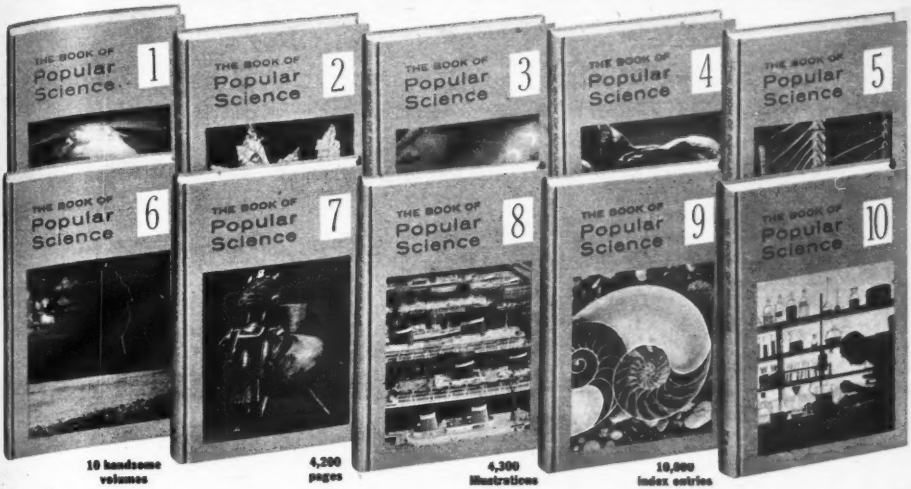

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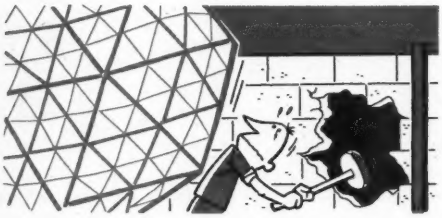
• *Geometric Toothpicks*



I was quite enthused over your story Toothpicks+Glue+Geometry= Barn in Jan. '58 MI. However, the situation has gotten entirely out of hand. I recently began gluing toothpicks together and I now have the biggest damn polyhedron you ever saw. So big, in fact, that I can't get it out of the basement without breaking it up. Can you offer any suggestions?

Bill Knowlten
South Bend, Ind.

See picture, Bill.

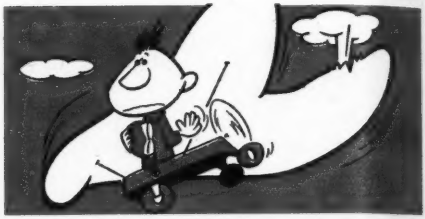
• *April Mystery*

Here is a nobby little brain-twister from Geoffrey Mott-Smith's Mathematical Puzzles For Beginners & Enthusiasts, published by Dover Publications, Inc., copyright 1954.

Jim Carter was sorry to have to discard last year's license plate from his car, for the numbers made a beautiful poker hand—a full house. He was disgusted to note that on his new plate all five figures were different. To top that, he inadvertently screwed the plate on his car upside-down, with the result that he increased his registration number by 78,633 until he noticed the error.

What was the number on his license plate?

• *Pump-Up Plane*



That Pump-Up Plane (Jan. '58 MI) is certainly a novelty. But I'd like to know what would happen if I was up around 5,000 ft. and the thing got a leak. What then?

Tom Day
Lexington, Ky.

Don't forget to wave good-by.

• *January Mystery Solved*

Mystery: How many ancestors will a man have in nine generations?

Solution: In nine generations a man would have a total of 1,022 ancestors.

Perry Devlin
Arlington, Va.

• *Fun For Fossils*

I got a big kick out of your article Fun With Fossils (Jan. '58 MI). You don't know the half of it! You should see this factory during lunch hour! Wow!

Gloria Barnes
Burbank, Calif.

[*Continued on page* 29]

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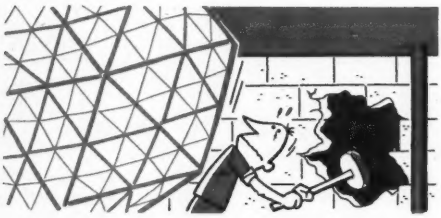

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[*Continued on page 29*]

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Invention Clinic

[*Continued from page* 20]

individual residences. He uses lot-line measurements, then L-shaped wires made from welding rods and finally a magnetic needle. "If anyone could locate these services easily with inexpensive units, he would become a rich man."

You and Steve Muhalicek of Denison, Iowa, should get together, because you are using the same system which Mr. Muhalicek believes he invented. Obviously, if the wires were effective, you would not need a magnetic needle to pinpoint the location of a large metal box so near the surface. The magnetic needle is based on scientific principles. The bent wires are not. For our purposes a mine locator, such as is used by the army to locate hidden ground mines or unexploded shells, would do a quick and accurate job.

Double Hunting Bow

Kenneth G. Foster of Cincinnatus, N.Y., sends a drawing of a double bow in which two 30-lb. bows give a 60-lb. pull. He writes: "If you can't think of anything wrong with it, show it to a good bow-maker and he might think of some for you." What is our opinion?

By your logic, ten six-lb. bows also would give a 60-lb. pull. Unfortunately, your reasoning is not scientifically sound. You will get only a 30-lb. effect, minus losses, regardless of how many 30-lb. bows you connect in series. Try it, lashing two together, then measure with a spring balance.

[*Continued on page* 35]

INVENTORS

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GUSTAVE MILLER

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REGISTERED PATENT ATTORNEY

ASSOCIATE EXAMINER U. S. PAT. OFF. 1922-1929

Patent Attorney & Advisor U. S. NAVY DEPT. 1930 1947

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It is easy to see why the Claim Investigator plays a leading part in each and every one of the twenty five million auto accidents that occur each year, and why the demand is so great that there is bound to be a shortage of trained men. There is always a desperate need for trained experts who can take over and make fair and prompt decisions.

But Money Isn't ALL You Get!

The foregoing are *facts*...facts you can easily verify if you care to check with *any* insurance company or *any* law office. And it explains why *even beginners* in the field of Claim Investigating can count on a a starting salary of up to $450.00 a month.

But a salary like this is only the beginning. Insurance companies, for example, usually furnish their Claim Investigators a company car and the company pays for the upkeep. Or if he drives his own car the company pays him a mileage allowance to cover operating costs. Nor is that all. Company executives realize the importance of the Claim Investigator's work. They segregate him from the noise of the general office—and install him in a private office of his own—with a private secretary.

HOW YOUR EXPENSES ARE PAID

When a Claim Investigator's work takes him away from his office, the company pays his expenses while he is gone. These expenses may cover travel—meals—living at good hotels, and include incidentals such as cab fares, tips and business entertainment. On top of all these "extras" you usually get a liberal sick leave allowance, hospitalization insurance, life insurance, a pension plan and many other benefits the average working man never dreamed of.

And remember that the Claim Investigator's life is filled with new experiences and new interests. No two cases are alike! Each day presents exciting new problems, and back of it all is the deep, inner satisfaction of having solved them fairly, justly.

You Associate with Important People

In this kind of work you meet interesting people, important people, influential people such as lawyers, police officers, judges. Each one is a new adventure. These are the kind of people worth knowing. They are the kind of people who can help you to get ahead faster and those acquaintances often develop into life-long friendships worth far more than financial gain.

If You Prefer, a Business of Your Own

Even with all these benefits some men prefer to operate their own business. No matter how ideal the job, they want to be "on their own." There are few greater opportunities to do this today than those open to you in the field of Claim Investigating. You can even make your own home your headquarters. You have no office rent to pay—almost no overhead. Your chief expenses is the investment of a few dollars for stationery, business cards and office record sheets.

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It's easy to get into Auto Insurance Claim Investigating and Adjusting, once you have learned basic facts. Nor does it matter in the least what kind of work you may be doing now. I have seen men in the most humdrum, small pay jobs throw off the shackles that bound them to desk or work bench and quickly learn the fundamentals that made it easy for them to step into big-pay jobs as Claim Adjusters. I have seen this happen to clerks in stores, shop workers, salesmen, cab drivers, house-to-house salesmen, bank tellers, carpenters, bookkeepers. *And all they had to start was a driving desire to get ahead and the determination to see it through!*

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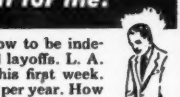

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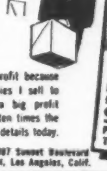

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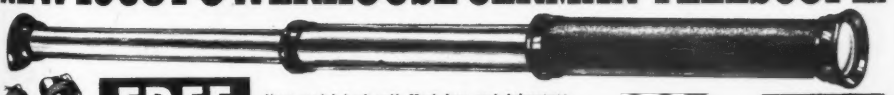

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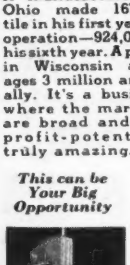

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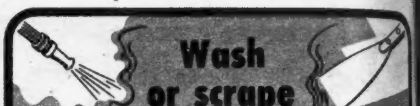

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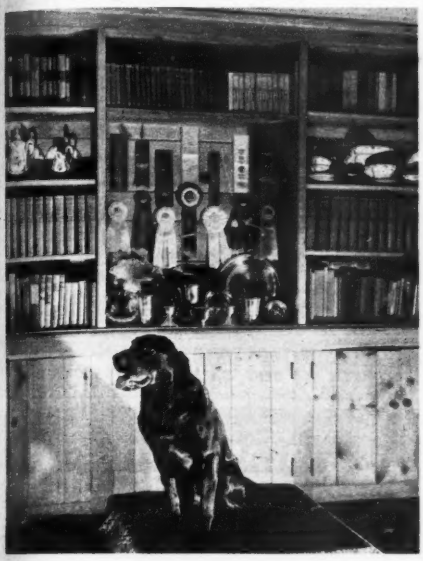
Dear Editor

[Continued from page 22]

• Boji



Recently I read something about Tom McCahill's dog winning a blue ribbon in a show. Do you have any pictures of him?

Mark Pierce
Las Vegas, Nev.

Sure do, Mark. Photo above is Tom's dog Boji posing with all his winnings. According to Tom he is the top Derby dog in the East. His official name is Nodak's Boji Boy. Nodak stands for North Dakota, his birthplace. Boji is a Black Labrador retriever. MI readers who remember the famous Joe who used to help Uncle Tom test cars and whose picture appeared in this magazine many times, will note the remarkable resemblance between Boji and his celebrated predecessor.

• Faithful Fan

I have been a steady reader of MI for five years and like it very much. When did the first issue of MI come out and how much did it cost?

Duane Frederic
Spokane, Wash.

In November 1928, Modern Mechanics, the Daddy of MI, appeared on the newsstands. It sold for a quarter.

[Continued on page 169]

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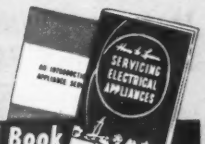

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PATENTS GRANTED

FLY haters, rejoice! Elmer Griffith of Canton, Ohio, has invented a fly-swatter with small tweezers to pick up the dead ones. The device won patent 2,808,320.

A tiny radio receiver, small enough to be plugged into your ear, received patent 2,805,332 for its inventor, Keith Bell, Washington, D. C.

A mustache trimmer which can be preset to fit the face and lip spinach of the user was invented by Primo Talamonti of Chicago Heights, Ill. The device was granted patent number 2,804,684.

A water-cooled cigarette holder which its inventor, Wensan Wang of Tokyo, Japan, claims can filter, cool and moisten smoke before it reaches the smoker's mouth, took patent 2,802,472.

Raymond Smith of Prescott, Wash., has devised a "green toe" in the form of a toe hoe. The tool fits onto the shoe of the wearer and enables him to uproot or slice through weeds without having to bend over. The device won patent 2,802,264.

Gate Guard, a gate locking device that uses no padlock or chain, yet prevents small children and pets from leaving the yard, was invented by Grover Black, St. Petersburg, Fla. Gate Guard was awarded patent number 2,793,893.

Do-it-yourselfers will like the Triquad, a turnscrew device which enables appliances or machinery to be quickly and easily leveled on an uneven floor. Invented by Thomas Longbotham, Portland, Ore., Triquad was granted patent 2,722,428.

An underwater compass which can be read at arm's length was invented by Russell Mason of Mystic, Conn., and granted patent 2,803,068.

Two Kansas inventors, Robert Cameron and John Hopkins, Jr., have perfected a radio-controlled obedience device to train dogs or other animals. They were assigned patent 2,800,104. •

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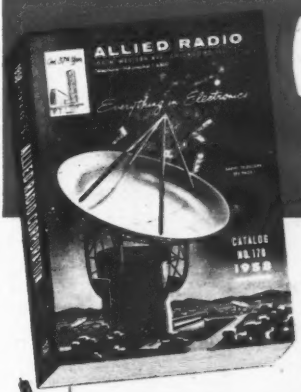

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Stereodisc, the first- conventional commercial pressing of a stereophonic long-playing phonograph record, is now available. Made by Audio Fidelity, Inc., 770 11th Ave., New York 19, N. Y., it will also be capable of being played binaurally as soon as stereo cartridges are made available to the mass market.

Stromberg-Carlson "Pagemasters" were used by 32 members of the recent NATO summit conference in Paris. They're small pocket-size receivers that emit a soft buzzing sound when one "Pagemaster" is dialed to another's individual radio signal, thus paging the wearer.

"Cabinart '58," a multi-colored catalogue, describes a wide range of hi-fi equipment cabinets and speaker enclosures and is available from Cabinart, G & H Wood Products Co., Inc., 99 N. 11th St., Brooklyn, N. Y.

Kodak Research Laboratories have perfected a developer timing clock that will run fast or slow, depending on the temperature of the developer. The clock is calibrated to the developer's time-temperature relationship, thus allowing you to yank your prints at the *correct* moment, regardless of the *prescribed* developing time.

Everything from accelerator pedals to zephyr manifolds!—that's what you'll find in the new 1958 issue of "Hi-Performance Equipment." Car buffs can obtain this catalogue by sending 25c to Newhouse Automotive Industries, 5803-05 E. Beverly Blvd., Los Angeles 22, Calif.

Vac-Seal is a small hand pump that reseals paint and varnish cans whose contents have been partially used. By creating a vacuum in a can through a small hole in the lid, and then sealing the hole, Vac-Seal prevents evaporation and oxidation. Made by the B & S Co., P.O. Box 1840, New Haven, Conn.—*D. H.*

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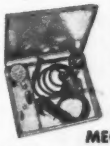

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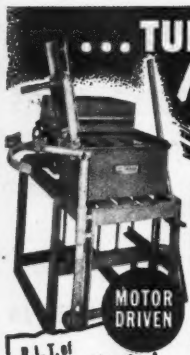

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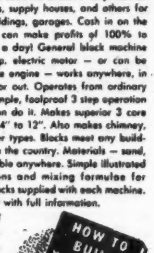

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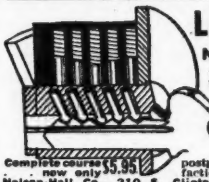

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Invention Clinic

[Continued from page 24]

Linotype Machine Improvement

R. B. Powers of Butler, Ind., suggests improvements to be made in linotype machines, particularly the "Rube Goldberg method of releasing the brass matrix after a key on the keyboard has been touched." What is our opinion?

Anyone who has spent as many years as you at both the linotype machine and as publisher of a newspaper in this day of great advances in science and technology appreciates fully your statement that only "minor changes have been made in this machine since its conception by Otto Mergenthaler more than 50 years ago."

No doubt your suggestion for a solution is in the right direction. But is it basically patentable? This is something which you might discuss with your patent attorney who should report the results of a search. There is a more important stage beyond this toward which you should set your sights. What do you do with the patent after you get it? Who would do the experimental work, produce and market the machine? Your sales potential is limited to a very few manufacturers and a few companies which might like to break into this field. This is the big gamble which only you know if you can afford to risk.

Power Multiplier

R. J. Banis of Staten Island, N. Y., sends diagrams for a hydraulic device which utilizes the advantages of the difference in area of two connected cylinders of different diameters. He reasons that this will multiply horsepower. He asks a number of questions. What are our criticisms?

In your calculations you have assumed that 100 horsepower is the constant which you can use at each stage. But you must remember that one horsepower is 33,000 foot-pounds per minute, i.e., a weight of 33,000 pounds will be raised one foot in one minute. Any combination of weights and distances which will give the same product in the same time will be equal to one horsepower. In your design the mechanical advantages are obtained through the loss of distance and time, or vice versa, depending on how you connect the cylinders. But the horsepower does not change except for the losses in the conversion through the system. The only thing you have here is a miscalculation. •

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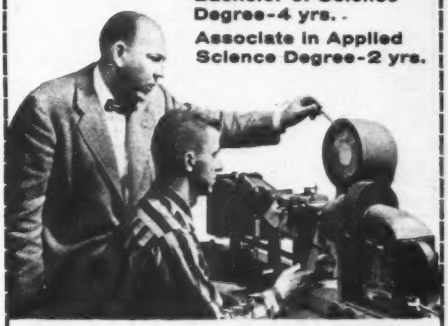

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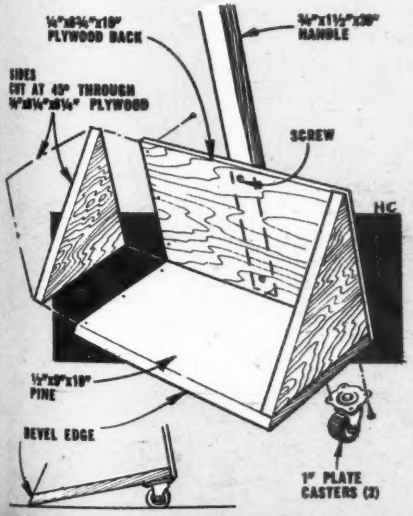

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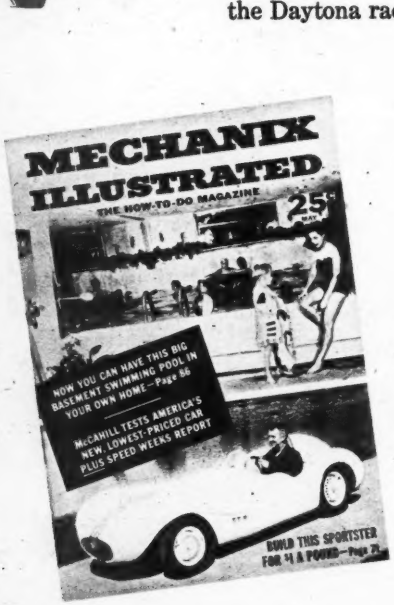

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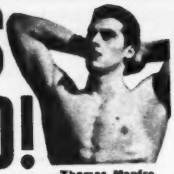

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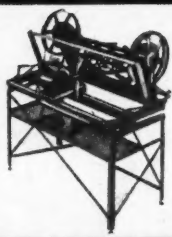

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Mail for McCahill

Uncle Tom is sorry he can't answer all his mail personally. In this column he'll answer the most interesting letters. Write to him at MECHANIX ILLUSTRATED, 67 West 44th St., New York 36, N.Y.

● *Now that factory racing teams are disappearing, individual car owners will have a fair chance to compete. What do you think, Tom?*

H. Yepson
Irvington, N. J.

I'll let you know when I'm convinced that the factory race teams *are* out of business.

● *Being a driver from way back, I've noticed a change in driving habits. In the old days two feet were required for the clutch pedal, brake pedal and gas pedal. Two hands were needed for the big wooden steering wheel, choke, spark, gas controls, etc. Today —lo and behold—two pedals, no clutch!*

Hymie Cherk
Etna Theater
Etna, Pa.

Years ago the Captain Blighs of the sea realized that "a driven crew is a happy crew." In other words, unless the crew was kept busy 95 per cent of the time, trouble resulted. The same thing goes with automobiles. When a guy had to work like an arthritic organist playing Kitten On The Keys just to get his car down to the saloon, he didn't have time for the hypnotic effects of monotonous roads which lull today's drivers into a semi-conscious state of disinterest, making themselves and their cars into lethal weapons. Like the triangle player with the great Toscanini some years ago who had only one note to play and was sound asleep out of sheer boredom when his turn came, the drivers of today's almost-fully automatic cars will have to fight this nothing-to-do hypnosis.

● *I just read your review of the Goggomobil and would like to say that you did justice to the car. There is one slight error in your report. I, with the help of a long steep hill and my pilot's license, managed to get the little bug up to 75 mph. Since then I have decided to do all of my flying in the air. I have the standard model (worn mop) and at times managed to get four medium-sized (5'9"; 165 lb.) sardines in it for a short ride. I bought my bug new in Munich, Germany, and have crossed the Alps, Dolomite Alps and Apennines in it. Also the Catskills.*

Irving A. Sherman
Bronx, N. Y.

Look, Irving, we don't question the Alps or Apennines—but the Catskills! That seems unbelievable. In fact, it is the considered opinion of this department that the best way to cross a mountain with a Goggomobil is via Air Freight.

● *I notice everyone's shouting about the small car boom. Do you think it'll catch on?*

Fred Mullin
Rochester, N. Y.

Who's shouting? In the first place (to toss a little oil on the fire) we no longer build any big cars and haven't in years. Did you know that the famed Stutz Bearcat roadster weighed 4500 pounds? Cars such as the old 66 Pierce Arrow, Locomobile, Simplex, Cunningham, Minerva, Isotta-Fraschini, Rolls and many others would make our biggest Fleetwood Cadillacs, Imperials or Lincolns of today look like Dodgems. Today's cars aren't big; there are just too many people stupid enough to build small, cheap garages and now feeling the squeak. The average jockey might feel like a giant in a pigmy camp. That's what the automotive situation is today. I personally prefer small cars for the fun of driving but the average American when he hits the road with his family must have enough car to carry all their needs and belongings for a long vacation, including golf clubs, water skis, Aqua-Lungs, folding boats and dress-up clothes for the gals—not to mention the old man's polo mallets. You just can't swing that kind of

[*Continued on page 54*]

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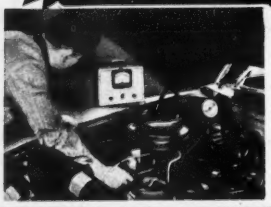

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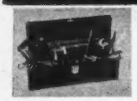

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Mail For McCahill

[*Continued from page* 53]

traveling in a Goggomobil.

● *Do you think the free piston engine is a coming thing?*

Bob Hinkson
Chicago, Ill.

Not as long as they can still sell them.

● *What is your method for rotating tires?*

Joe B. Farnum
Flushing, L. I., N. Y.

Start the engine, release the brake, put the car in gear and with any luck, the tires will rotate. Seriously, if you go in for rotating tires (which I don't because of an old ailment—laziness) the best way to do it is not criss-cross, but by shifting the front ones to the rear and vice-versa.

● *Is it true that they used your head as a model for the earth satellite?*

Bud Kelly
Omaha, Neb.

It's not only true but I'm suing them for infringement of my patents.

● *I've had the urge all my life to break the glass with the little hammer and pull the fire alarm.*

S. J. Black
Albany, N. Y.

Well?

● *My motivation in writing to you is to seek some advice on foreign imports. Even though my yearly car allowance is $500 it still only covers about half the annual cost of running my American car. But since I have a wife and two small kids I'm almost afraid of dropping it. I'd like to turn to one of the small imports but have several questions in mind—specifically about the Renault Dauphine and the DKW: 1. Workmanship on the DKW has impressed me; that on the Renault has not. 2. Of the two cars, which would be your preference and why? 3. Is there another import you'd recommend in place of these two? I've ruled out the VW because of lack of space and wind-wander.*

Rev. Donald W. Stoughton
Trinity Lutheran Church
Battle Creek, Mich.

In your position I can't see how you could possibly beat the present American Rambler. It has excellent gas economy, extremely long trouble-free life and after 50,000 miles I'm sure it would prove a much sounder investment than either of two imports mentioned.

[*Continued on page* 56]

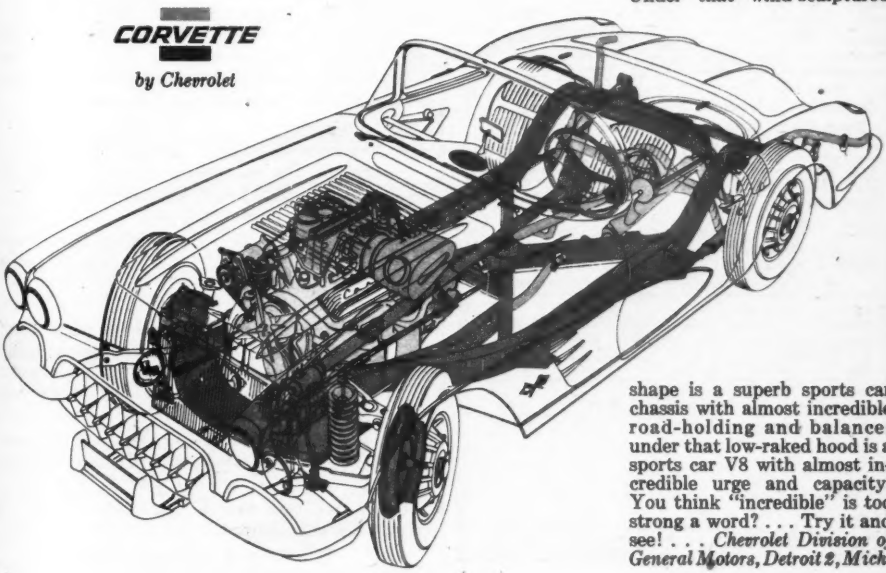
corvette for '58

CORVETTE
by Chevrolet

Brand new... and bred for action!

This is a very special car for special people with very particular requirements. We'll grant you it is as sleekly handsome a machine as ever whispered down a boulevard, with an individual flair that is shared by no other. And we'll also concede that its road manners are impeccable, that it moves with a glove-leather suppleness that is obedience personified.

But the real difference between the 1958 Corvette and any other American car is this: It is an authentic sports car. Under that wind-sculptured



shape is a superb sports car chassis with almost incredible road-holding and balance; under that low-raked hood is a sports car V8 with almost incredible urge and capacity. You think "incredible" is too strong a word? . . . Try it and see! . . . *Chevrolet Division of General Motors, Detroit 2, Mich.*

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Mail For McCahill

[*Continued from page* 54]

Foreign car service comes high and as you have ruled out the Volkswagen (the only sure exception) I couldn't recommend the others to you. The VW Kombi could hold your whole congregation but it's subject to wind-wander, too. Have you looked at the Borgward station wagon? I have a feeling this is not the answer you wanted as I've been bitten by the foreign car bug many times myself. But there it is, straight on the line—though I suspect you'll get a lot of fun out of your Renault or DKW.

● *Blimp travel will never end as long as you're driving a car.*

Tom Shannahan
Chicago, Ill.

If you mean what I know you mean I hope the string on your yo-yo snaps.

● *Would you please settle a dollar argument for me? Is it possible at all for a stock 1957 Fairlane '500' Ford convertible with a Thunderbird engine to do 115 mph going up a slight grade in second gear? (I don't think it can.)*

Richard "Sheepdog" Breithaupt
Phillip's Exeter Academy
Exeter, N.H.

Sheepdog, old boy, even with an H-bomb assist it couldn't do 115 mph in any second gear normally listed as "stock." However, with certain rear-axle ratios it could pull it in Overdrive second. Browse through your old school records some day and you'll find that a "Tom McCahill" graduated from your school almost 70 years ago. My father.

● *The seat in my '57 car is terrible. Although I'm six feet tall and weigh 200 pounds, there is at least four inches clear over my head when wearing a hat.*

Walter R. Allen
Montreal, Canada

Short-waisted, eh?

● *I looked for a long time at page 78 of the August MI and came to one conclusion: Ford has not built a real Ford since the days of the Model T. Why doesn't somebody tell them that?*

Alastair G. MacGregor
Nieuwoudtville, Cape Prov.,
South Africa

Okay, Al, *you* are telling them—the Ford boys read this column.

[*Continued on page* 185]

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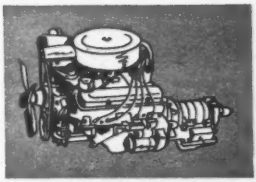

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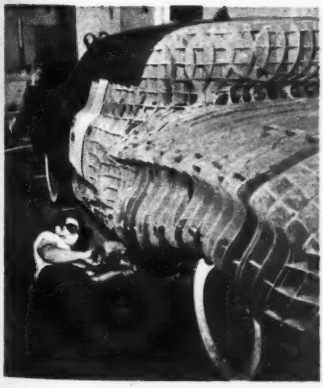
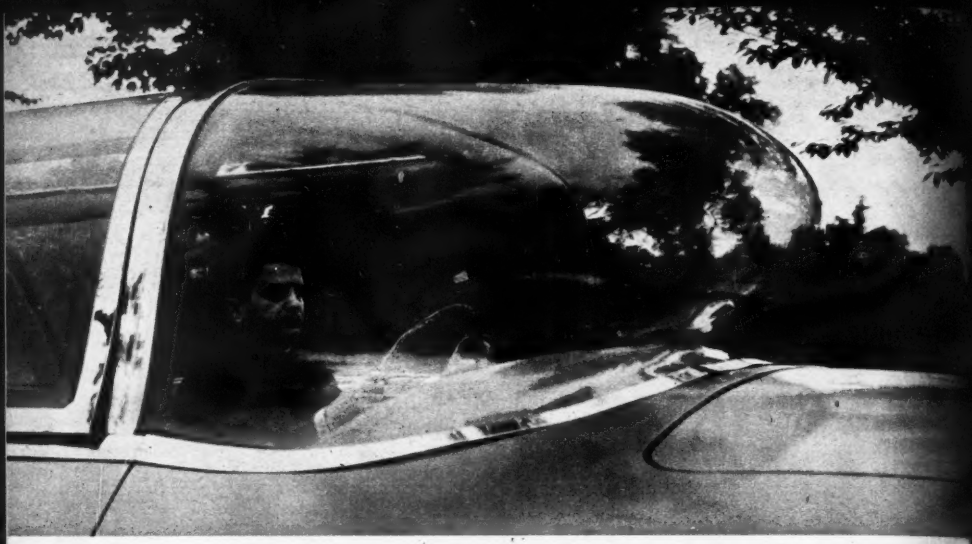


AURORA is the name of Father Alfred A. Juliano's dream car. The car-building priest of Branford, Conn. is said to have produced the first custom car in the United States with radical safety innovations and air conditioning incorporated in its basic design.

Conceived, invented and built by the Father, the highly unorthodox Aurora is an 18-ft. long plastic-bodied car that was two years on the drawing boards and required three years to build. It was featured in Feb. '56 MI in a story titled Meet Father Juliano. The Aurora with its

FATHER JULIANO as he appeared in Feb. '56 MI when he was still building his dream car.



BIG BUBBLE windshield is set two feet further forward than conventional ones. Its design is stronger, safer, gives good visibility in any kind of weather, it is claimed.

dent-, rust- and corrosion-proof body is specifically planned for long distance highway travel. The vehicle has a tinted, transparent astrodome roof with interior metal shades which adjust overhead. Its stainless steel, racing-car-type roll-over bars located beneath the roof are designed to protect the passengers.

The conventional grille has been discarded in favor of a large, front end air scoop which houses its multiple headlights. The spare tire, located under the hood, is on a platform which extends to lower the tire to the ground without

AURORA has Fiberglas body, tinted transparent astrodome roof. Bumpers are triple-action shock absorbers with four-inch give.

1. INSTRUMENTS are recessed in deep sockets for greater safety. 2. Curved firewall directs airflow to exhaust ducts to improve cooling. 3. Taillights are enclosed in small greenhouse. 4. Rear view shows simplicity of design. As spare is kept under front hood, uncluttered trunk affords 20 cubic ft. of storage space.

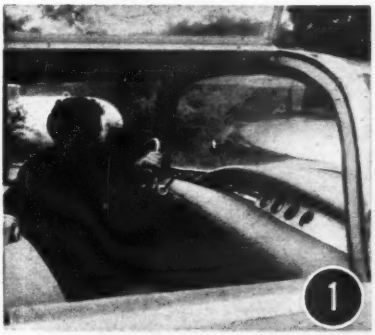
HINGED HOOD opens from front. Buyers have choice of power plant when they order.

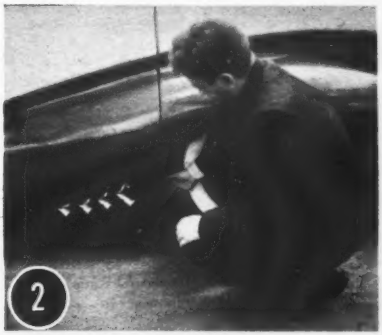
DASH is foam rubber cushion eight inches thick, safety-designed to prevent injury.

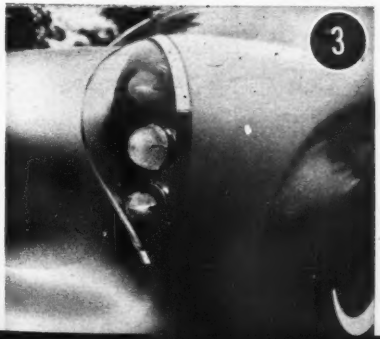
handling. Dash-controlled hydraulic jacks in the steel frame make tire-changing an easy chore.

The Aurora is equipped with safety bars on the front and rear seats, a telescopic steering column that collapses on impact and shock-resistant doors. All hardware including door handles is flush with the body and a heavy shock padding lines the interior.

The custom car sells for $12,000. According to Father Juliano, "The Aurora is the safest car in the world; it will save many lives." •

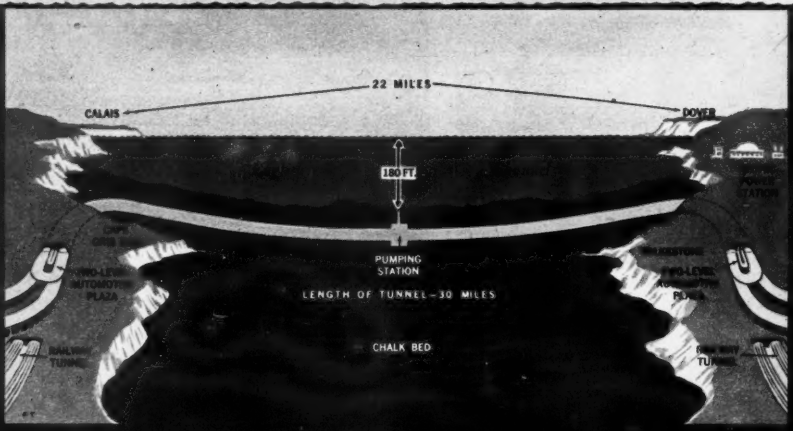


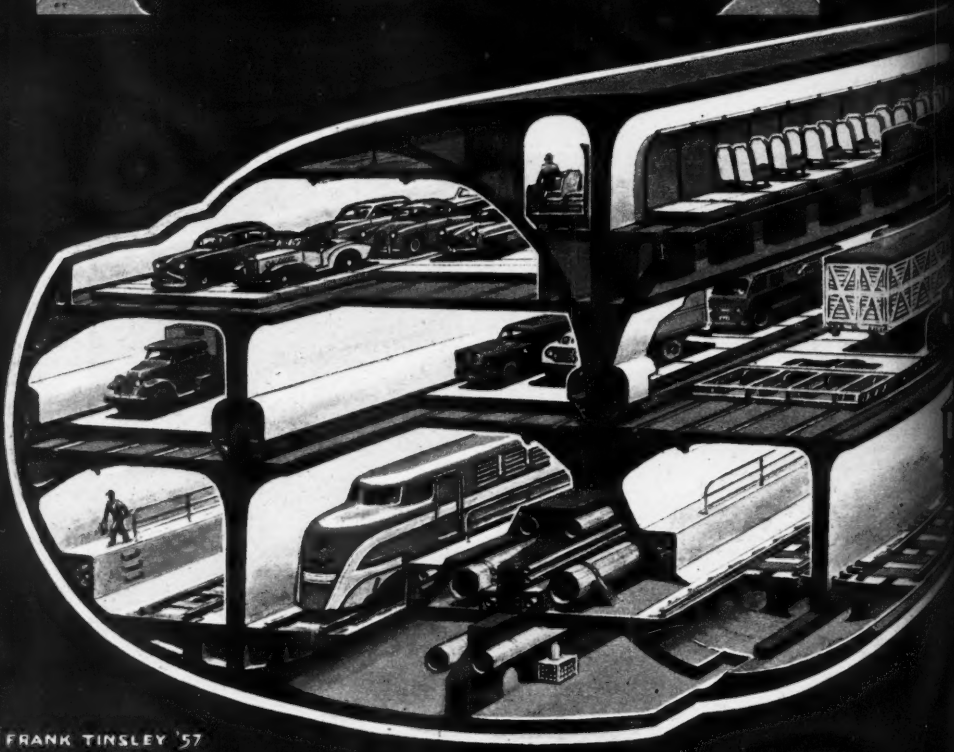




English Channel

By Frank Tinsley





FRANK TINSLEY '57

Tunnel at Last?

CUTAWAY of tunnel shows pedestrian conveyor, car and train sections, utilities conduits. Insert shows tunnel location.

THE idea of a tunnel under the English Channel has always been popular with the French and unpopular with their island neighbors. The first people to present the idea more or less seriously to anybody were Napoleon's engineers at the time the Little Corporal was planning to visit Blighty with his armies. That, they thought, would be one way to get an invading army on English soil. The later French reasoning, that a channel tunnel would benefit trade, has never

allayed British fears of columns of ruddy foreigners walking calmly in under the Fleet.

But Zeppelin raids, the Battle of Britain and the perfection of guided missiles, atomic warheads and airborne invasion techniques have lessened the importance of Britain's ancient moat. Today it's chiefly a question of how to get the 6,000,000 annual channel crossers and the ever-increasing goods tonnage back and forth with minimum seasickness, delay and breakage.

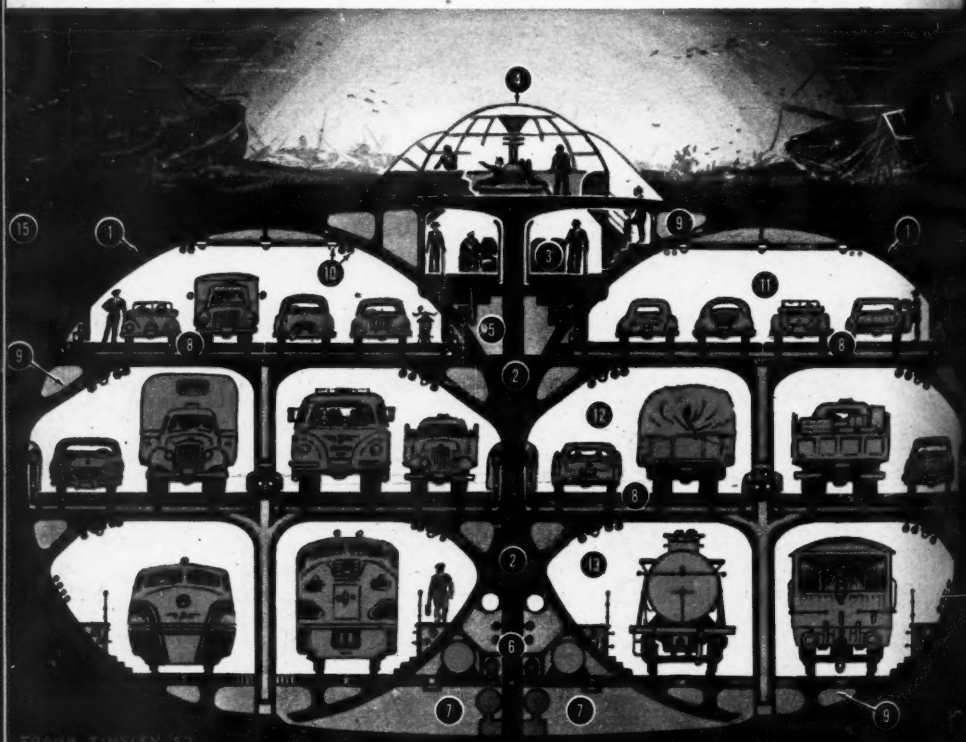
One company interested in getting the job is the recently dispossessed Universal Suez Canal Company. Another is the British Channel Tunnel Company, which proposes a pair of railway tunnels and no auto tunnel because of the tremendous air-conditioning problem.

U. S. tunnel experience shows that an auto tunnel would be a much sounder commercial venture, however, so MI's Channel Tunnel Committee have come up with a solution to the car exhaust problem in the 30-mile tube.

Briefly, we propose sending the cars through on a conveyor belt. The mechanical feasibility of this is established. A U. S. Army conveyor belt carrying unit loads up to 3,000 lbs. has already been built and demonstrated. It can go around curves and climbs grades as steep as 27 per cent. The novel feature of our channel tunnel conveyor would be its maximum speed, in the long stretch, of 30 mph. That would take a car from England to France in an hour—about twice the time of present air trips but much faster than boat crossings.

On the conveyors, cars can be placed bumper to bumper and hub to hub. Top

KEY: 1. Twin tubes, built separately; 2. Connecting structure; 3. Passenger conveyor; 4. Observatories; 5. Air ducts for passenger tunnels; 6. Power, oil, telephone lines and mail tubes; oil lines are pink; 7. Bilge takes water from each tube separately; 8. Conveyor belts; 9. Air ducts; 10. Fluorescent lighting; 11. Upper levels for European-size



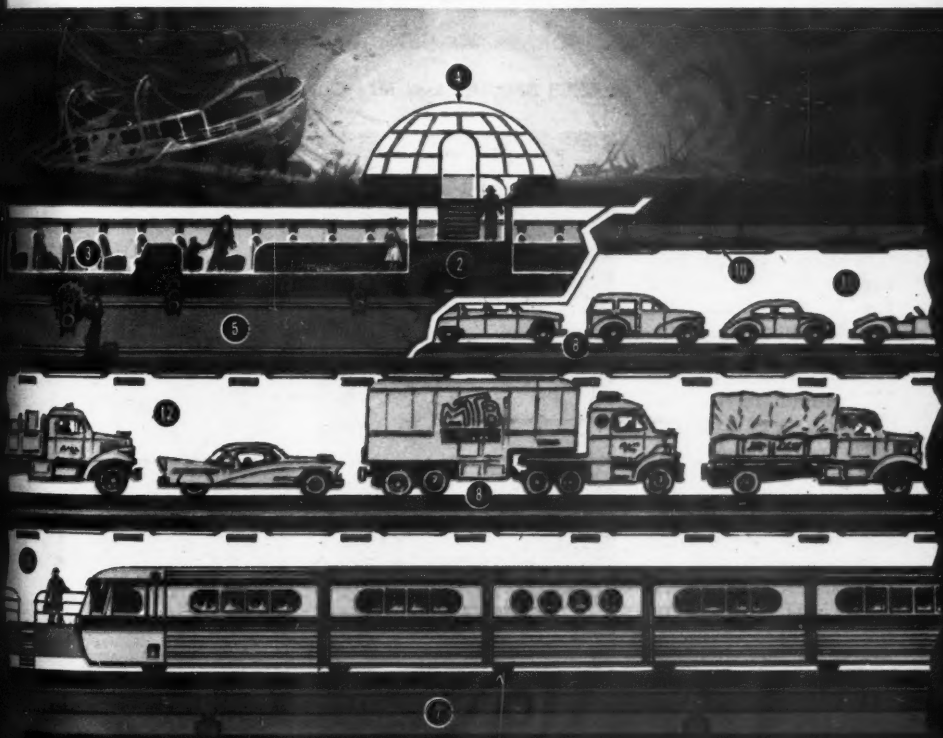
vehicle capacity of the completed plan will be more than 1,000,000 cars in 24 hours! Present loads and those of several years to come can be carried by a single tube, however, and the beauty of this plan is that one tube can be installed and put into use at first and the other built when demand is sufficient.

The placement of air inlet and exhaust ducts, power and lighting systems, signal wiring, catwalks and inspection passages, are shown in the drawings. Utility and transmission lines are grouped in the lower central connector and are accessible for inspection and repair at any point. The oil lines run through special liquid-tight compartments fitted with one-way valves that drain into the bilge below. Should a break occur, the lost oil can be recovered. This bilge area, traversing the bottom of the tunnel structure, drains all levels separately and is capacious enough to handle almost any emergency flooding. Water collected in it flows downhill to the lowest point of the tunnel arc where an automatic pumping unit expels it into the Channel.

A four-track electric railway line occupies the lowest level of the tubes.

Set between the main tubes, in the upper section of the connecting structure, is a moving platform for pedestrian visitors. Entering from either end, the tourist is carried in comfort to a series of underwater observatories set at vantage points along the channel bed. From transparent domes projecting just above the silt, he can view the wreck-strewn bottom. An attraction such as this could earn a substantial part of the tunnel's income. •

cars, motorbikes, etc.; 12. Middle level for trucks, buses, American-size cars; 13. Two-track railways; 14. Power lines, motors, are red; conveyor platforms, drives and gearings are brown; air ducts, bilges and access passages are gray; 15. The chalk bed of the English Channel. Its natural curve is followed by the curve of the MI tunnel.



"LITTLE TOOT" —THE WINNER!

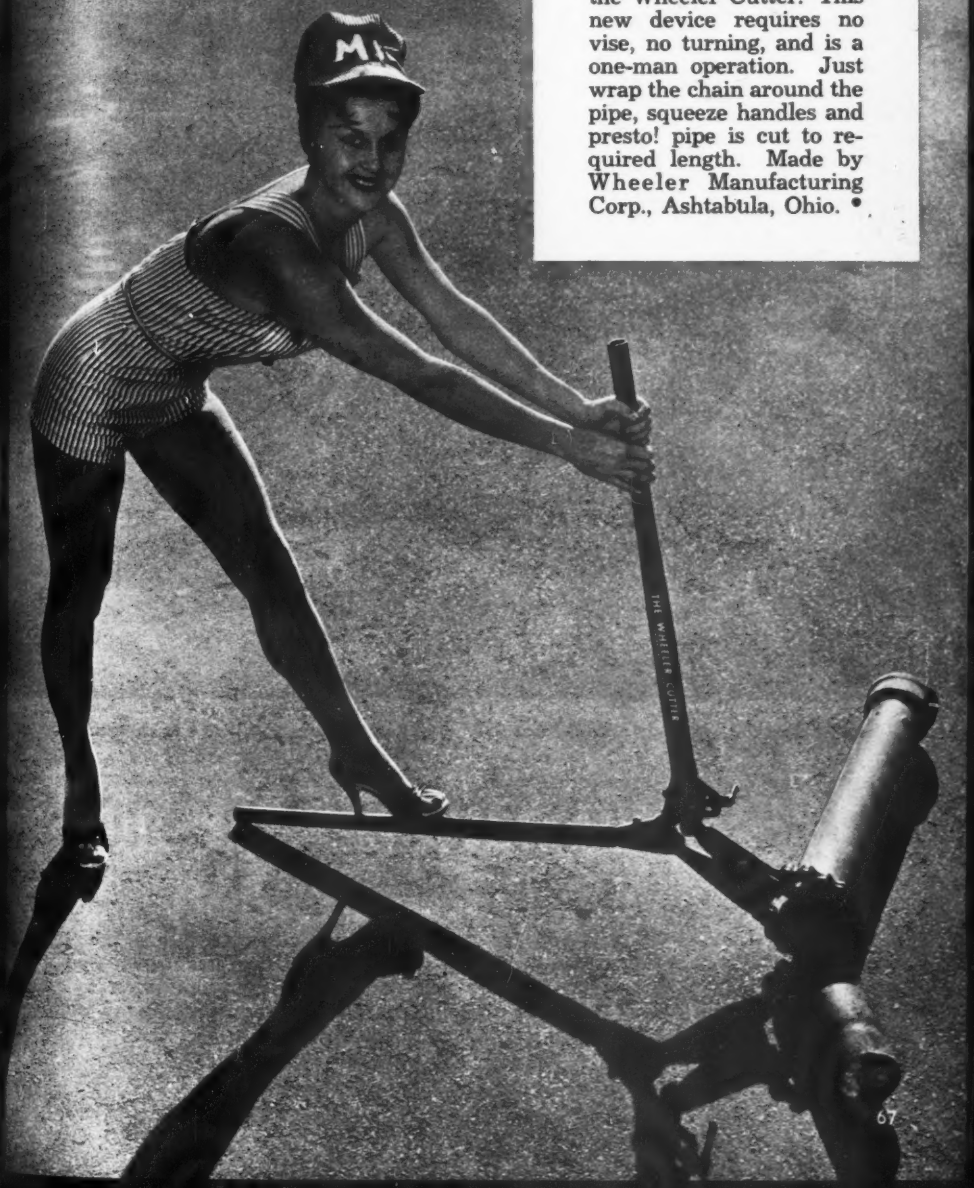
MEYER SPECIAL took MI's Outstanding Achievement award.

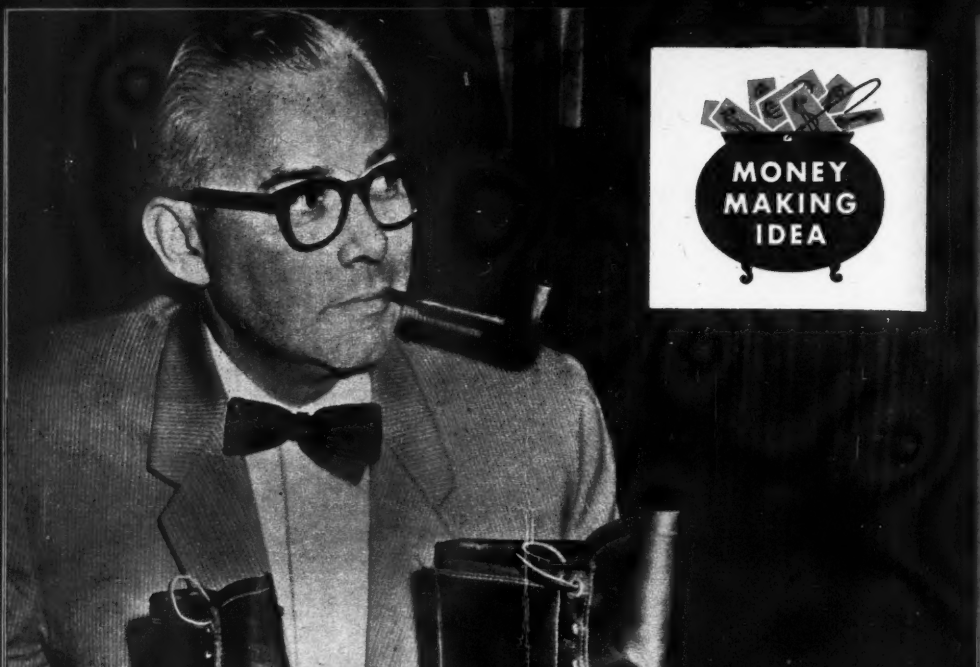
AT the annual Experimental Aircraft Association Fly-In at Milwaukee, where members get together to compare planes and talk shop, a regular feature is the awarding of the MI Trophy "For Outstanding Achievement" in the field of home-built aircraft. The '57 winner of the MI Trophy was George Meyer, Corpus Christi, Texas, with his Meyer Special airplane Little Toot, a fine modern light plane powered by a Continental C-90 mill, which gets 90 hp. EAA prexy Paul Poberezny presented the Trophy to Meyer on behalf of MI (photo at right). •

MI TROPHY was presented to Meyer (left) by Poberezny.

MIMI

MIMI, a real sharp gal, finds soil and tile pipe-cutting a breeze with the Wheeler Cutter. This new device requires no vise, no turning, and is a one-man operation. Just wrap the chain around the pipe, squeeze handles and presto! pipe is cut to required length. Made by Wheeler Manufacturing Corp., Ashtabula, Ohio. •





KING-SIZE 16-EEE boot dwarfs 10-A job in front of Bernard Lazarus, prexy of shoe firm.

B-I-G Profits From B-I-G Shoes

By William Macfarlane

BERNARD LAZARUS and his two partners, Manuel Alter and Arthur Alexander, stepped into the shoe business in 1946 with a business aptly called King-Size Footwear, a mail-order firm catering to men with oversized feet.

Today, known as King-Size, Inc., the Brockton, Mass. firm has grown from a one-room, three-man operation to an internationally known company shipping 100,000 units a year with a gross income estimated at over $1,000,000.

Boasting a pair of 11½-AAA brogans himself, Lazarus, president of King-Size, knows the woes of the big-footed male who tries to buy a pair of double digit shoes that fit and have some semblance of modern styling.

"I was in the shoe business myself," he says. "Had my own sole leather factory. If I had a devil of a time getting a shoe that fit me correctly, figure out what the other poor guys had to go through."

Before 1946 the man with large feet was at the mercy of his limited pocketbook or a shoe manufacturer's whim. When he went into the neighborhood shoe store, he more often than not had to buy on a "take-it-or-leave-it" basis. Manufacturers supplied their retail outlets with one, perhaps two styles of shoes in the big sizes. Generally, sizing itself was erratic and half-sizes were practically unheard of.

Except in a couple of major cities, there were no stores in the United States that even thought of the six-footer-plus as a potential market. His only alternative, if he wanted to be as well dressed as the Joe Averages in the sizes 7 to 9 grouping, was to buy his shoes custom-made at $30 to $50 a clip.

It took a war-time incident to get the million-dollar shoe idea off the ground. Late in World War II, at an embarkation point in New York, a troop ship set to sail for Europe was delayed because it was found that a dozen key personnel were deplorably shod. The cause was big feet.

Army supply officers made frantic calls to Alter, a shoe manufacturer with government contracts in Brockton. Alter, in turn, got a rush order out to Lazarus for oversized soles and the finished shoes were sped to New York.

Rehashing this incident on a business trip after the war, Lazarus and Alter discussed the question of what these men would do for footwear when they returned to civilian life. The idea was born. In 1946, Lazarus and Alter, along with Arthur Alexander, a mail order executive, started manufacturing the out-size brogans.

Production costs were the first barrier the trio had to hurdle. Picture a shoe that is about two inches longer and

SOLES are made of special gauge leather to support bigger, heavier men who wear them.

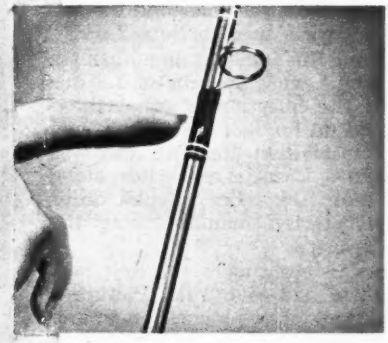
an inch or so wider than the average article and you'll get an idea of what the partners were up against. A King-Size 15-EE, for example, required anywhere from one-third to one-half more leather than a regulation size 9. The beating a big man gives his shoe is double that of a shorter, lighter person. Bottom stock or sole leather must therefore be thicker [*Continued on page* 168]

POST OFFICE is right on the premises due to mail order firm's huge volume of business.

It's New!

CYCLE RECORD of 1000 meters in 21.45 secs. was set in Italy by Alfredo Milani in this streamlined number. Next day Milani took another crack at it, lowered time to 20.95 secs.

FLEX-GUIDES for spinning rods fasten by one foot only, thus allowing the rod to flex freely.



CADDY CANE club carrier totes full set of clubs plus tees and balls, stands by itself on its spike end, weighs only 12 ounces.

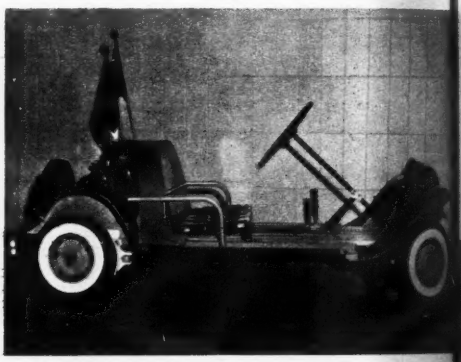
TOKYO MONORAIL, first in the Orient, carries passengers 32 feet above the ground between two zoos in popular Ueno Park.

JEEP SEAT modeled on deck seat lines takes the bumps out of jeep jockeying by means of a rubber torsion spring suspension, adjustable canvas seating.

CONTINUED...

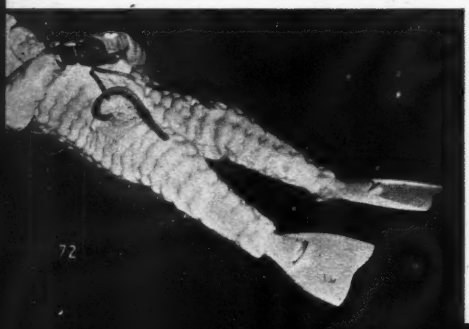
NEW DRONE, Republic SD-3, flies Army surveillance with interchangeable systems. Pilotless craft takes off fast with jet assist.

SOVIET ZIL, newest iron behind the curtain, shows Americanski trendski. Dig wrap-around windshield, light hoods, chrome.



PECO BUCKAROO, new off-road funster, does 18 mph with 3-hp mill, pulls lawnmower, roller, spiker and a useful dump trailer.

LONE SWIMMER in British public pool one chill night was Alister Simpson, who is working on an improved sub escape suit.

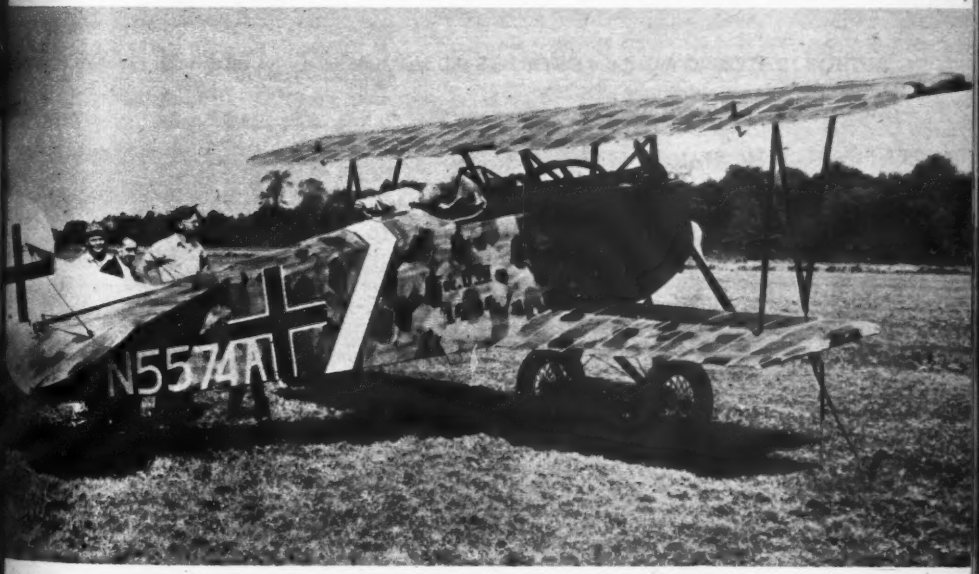


ANTI-TANK recoilless rifle is shown during tests run by Swedish army. It is said to have full hitting power of a 90-mm gun.

WIRE UNDERWEAR and gloves, latest Antarctic fashion, hook up to electric doohickey to record skin temperatures. The device was shown recently in London.

SMOG MASK being tried by the British uses a chemical supposed to counteract smog as it enters mask. Harmful smog is a major health hazard in modern Britain.

FOKKER REPRODUCTION built in Cleveland by fireman Edward Brennan from blueprints of the World War I Fokker D-VII is correct in every detail except for engine which had to meet modern CAA safety requirements.



MR. COLT'S NEW RIFLE

AUTHOR HERTZBERG found the Colt to be light, well-balanced—an all-around sporting rifle.

By Robert Hertzberg

NO longer satisfied with being the world's foremost handgun firm, Colt has branched out into sporting rifles. I could hardly believe the rumors at first but the Colt office in Hartford said, yes, the rifle was in the works. Three months later I had one for testing. It was a handsome bolt-operated repeater using FN Mauser bolt action. This is an import from Belgium's Fabrique Nationale de Belge, as famous a name in Europe as Colt is here. The rest of the rifle is American-made. The 22-inch barrel is chrome-molybdenum steel with 12-groove rifling. Stock

AMMO for the Colt "57"—the powerful .30-06 military cartridge or the popular .243 varmint killer.

is rich black walnut. Sight is a Lyman model 57 and the receiver is pre-drilled and tapped for Coltmaster telescopic sights, which come in two-and-one-half and three-power. Basic rifle weighs seven pounds eight ounces and costs $130 to $150, depending on the stock. A scope costs $50, adds 10 ounces.

Chambered for either .30-06 or .243 caliber cartridges, the Colt "57" can take lion or woodchuck.

I asked for a .30-06 because I had some old GI ammo to burn up. In my test I rested the forearm of the gun on a sandbag, with the butt firmly against my shoulder. Leaving the peep sight just as it came, I let off a trial shot from 100 yards at a paper target having an eight-inch black center. This registered about three inches below the black at six o'clock. A few turns of the sight's elevation screw put the next four shots all within the black bull.

Then I mounted a Coltmaster four-power telescopic sight, right out of a sealed box, held the cross hairs dead center on the bull and squeezed. At least it was on the paper: 9½ inches from the black at four o'clock. I cranked the windage screw in and the elevation screw up. The second and third shots hit an inch outside. A little trimming of the adjustments and I was really in business. The next seven shots were in a group about three inches in diameter and all in the black. I moved the windage screw another three notches. The five final shots made a tight cluster only two inches across.

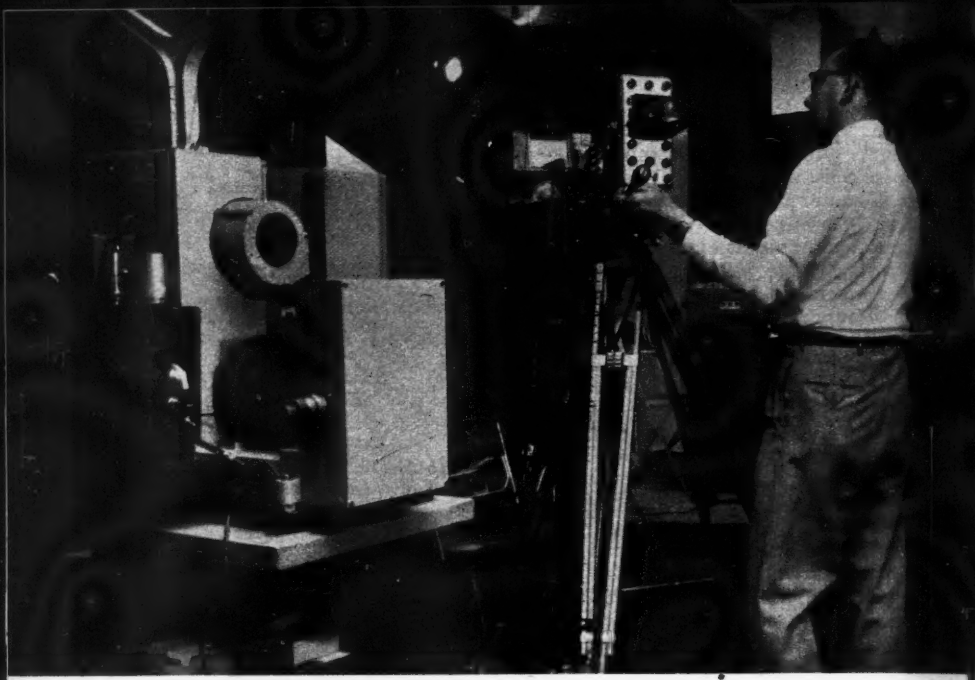
The cartridges I used were fully 15 years old. With high-grade commercial ammunition the groups undoubtedly would be even smaller. The bolt action is butter smooth, the trigger let-off clean and crisp.

Old West devotees who hate to see things change will be relieved to know that Colt has made rifles before—the earliest being a revolver-type introduced in 1836. Maybe Remington or Savage will start making pistols now! •

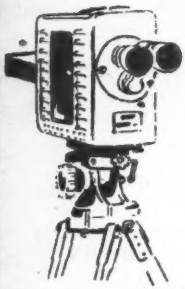
COLTMASTER Scope fits low on action but allows free ejection, bolt operation.

BOLT cannot be pulled accidentally but releases fast when catch is thumbed open.

PEEP SIGHT, adjustable, is standard equipment. It mounts just forward of the bolt.



ONE-ROOM STATION is located in former garage (inset) only 7x7 yds.



SMALLEST TV STATION

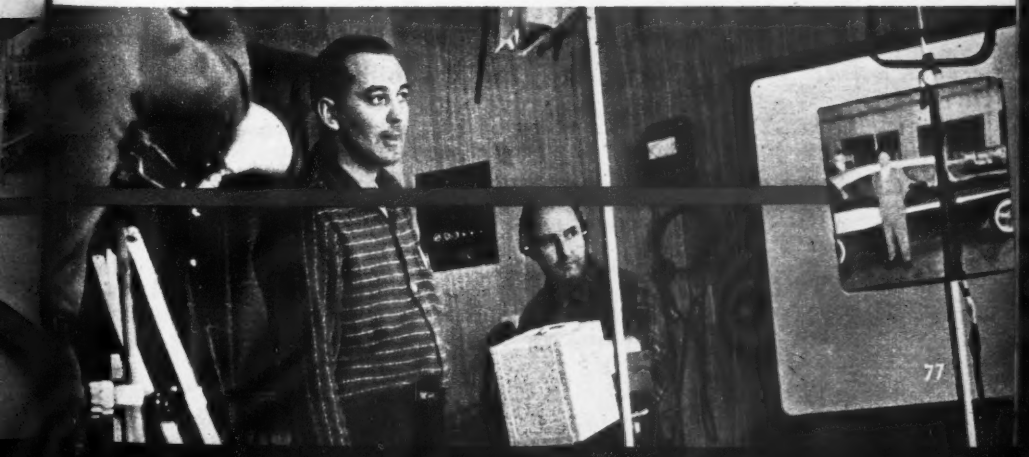
CAMERAMAN uses derby to cover lens when moving camera from scene to scene.

CAR COMMERCIAL is shot with slide film, then projected on screen for TV pickup.

WORK TABLE houses all electronic equipment including tape recorder, turntable.

LOCAL NEWS is covered by reporter with a Polaroid. Print is then shot by TV camera.

PJ-TV may well be the world's smallest TV station. Located in Port Jervis, N. Y., the closed-circuit system feeds the New York channels plus about two hours of local coverage (on Channel 6) to more than 2,000 happy subscribers. PJ-TV is housed in a former garage and has only one camera. Enterprise and ingenuity make up for lack of equipment. Most of the local telecasts are strictly impromptu but have a freshness and originality that have attracted 15 full-time sponsors who appreciate the loyalty of PJ-TV's viewers. •



McCAHILL TESTS

The '58 PLYMOUTH

"As outstanding as a $20 goldpiece

TEST CAR—Plymouth Custom Suburban—dealer Brewster Shaw and dapper friend.

By Tom McCahill

EARLY one cold fall morning back in 1949, I wound up a brand-new Plymouth Suburban and headed south. My mission was to give this car, the industry's first all-metal station wagon, a real shakedown with no holds barred. In the article that followed (April 1950 MI) I wrote:

"In two weeks I covered more than 4,000 miles, dunked the Suburban in the Atlantic and tried everything but a head-on collision to break it down. Many of those long miles I drove were at speeds ridiculously fast for a small station wagon. I wanted to give the car a real stamina test—and I'm pretty confident I gave it the works on that score. When I finally turned the Suburban back to Chrysler in New York it was just as

SUBURBAN

in a penny bank" says Tom.

DUAL HEADLIGHTS are standard on all '58 Plymouths. Suburbans come in 14 different models, V8 or six-cylinder.

considering the price field. Nestled in the bosom of the laughingly-called "low-priced Big Three," the Plymouth Suburban for '57 turned out to be as big a station wagon as any on the market and could match its big brother, the Chrysler New Yorker wagon, cubic inch for cubic inch in interior room. This holds true for 1958 also.

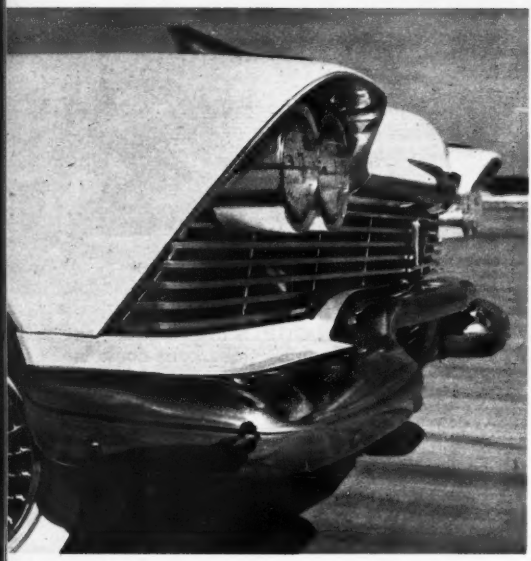
For 1958 the Plymouth Suburban has been sharpened up more than ever and, in this writer's bald-headed opinion, is the Outstanding Buy in the Big Three class. The engine has been enlarged on the standard models from 301 cubic

TOM REPORTS his test Suburban went grooving through bends and turns "like water through a garden hose."

sound and quiet as when I took it away."

That first Plymouth Suburban was the fastest overnight success since Sally Rand dropped a fan. It made the grade despite some knuckle-headed back-stabbing from certain top Chrysler brass who thought it was destined for failure from the start. Fortunately, this brass has since gone into retirement.

From the very onset the Plymouth Suburban has been a helluva buy—but in 1957 it became extraordinary,



"CHEESE CUTTERS" on front fenders are only drawback to fine design, says Tom.

GAS TANK CAP, easy to get at, is tucked alongside left rear fender fin.

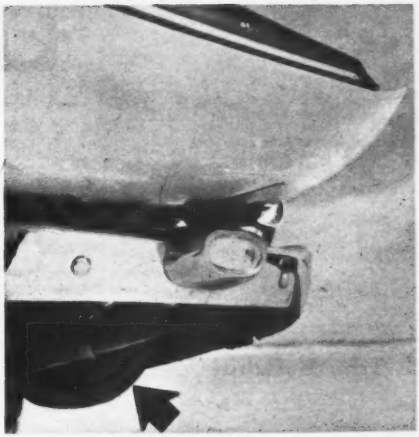
inches to 318 cubic inches and is known as the Fury V-800 (for reasons unknown to me). The standard rated horsepower is 225; our test car was the Fury V-800 with what they call a Super-Pak which whips up to 250 hp. This is accomplished by using a four-barrel carburetor, as against a two-barrel on the standard rig, plus a high-performance camshaft and distributor—enough to get this station wagon (which even a sixth-grader can tell you is hardly the model for drag racing) up to 60 mph from a standstill in ten seconds flat.

I found the Plymouth grooving through hard bends and turns (of which I made quite a few) like water through a garden hose. I was particularly impressed by the short-sharp turning radius under power, which varies considerably from the turning radius of a car traveling at walking speed. A skilled driver with a top-handling car and ample power can make a car turn completely around in almost its own length, through a little wheel-walking by the outside wheel. This Plymouth doesn't handle like an Old Maid's Delight but gives you the confidence a gutty, sharp car can give to a man who's capable of getting the most out of it. Station wagon body and all, this car has a real competition feel—which means safety far beyond normal, providing the driver is up to its capabilities.

If you really want to get Gung Ho! about the whole thing, however, you can order a Plymouth (wagon or otherwise) with the Golden Commando engine displacing 350 cubic inches and developing 305 hp. With this twirler under the hood, if you can't do 0-60 mph under nine seconds with your wagon it means you're either chicken or have a sore foot.

To test the drag potential, I drove it against a 1958 Other Brand station wagon, rated the hottest of all, for a number of runs. When 30 mph was reached the other wagon had not gained more than two feet. At 50 mph there wasn't more than eight feet of difference. However, after 50 mph the Other Brand was away and gone to the races. I cite this because this same Hottest of Them All wagon, twirled by a 370-cubic-inch engine, had just outdragged a '57 stick shift Thunderbird, right up to 80 mph. What would have happened if my Plymouth wagon had had the available Golden

BIG PLUS FEATURE is electrically-operated rear window which lowers into tailgate.



VERTICAL MOUNTING of spare (arrow) gives more roominess and comfort inside.

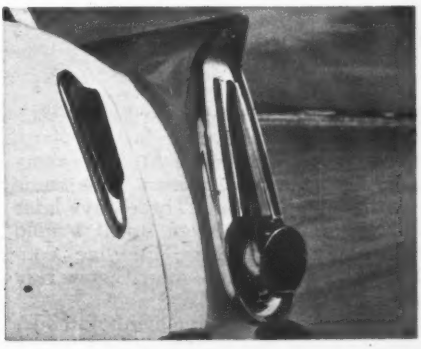
Commando engine, is still up in the air for mental grabs.

Brewster Shaw, many-times King Of The Speed Trials and a long-time Chrysler-Plymouth dealer in Daytona, Fla., supplied my test car, as he has done frequently in the past. Despite his being a Princeton man, I always like to get cars from Brewster to test because his wife, Junebug, is the greatest amateur chef in the world, bar none, and these tests often lead to gourmet meals at the Shaw residence. (Now, if that plug doesn't rate me *another* free dinner. . .)

The first thing that impressed me (the wrong way) with the new '58 Plymouth Custom Suburban was the cheese-cutter on each of the front fenders. Looks like Plymouth swiped them from GM's Chevy Impala and Cadillac—for what reason I don't know. These asinine decorations are about as functional as a straw hat full of beer and tend to cheapen the excellent overall appearance. If I bought one of these new Plymouths I'd whack off the cheese-cutters before driving a mile. Aside from this, I think the Suburban's looks are great. [*Continued on page* 165]

TEST CAR SPECS

MODEL TESTED: **PLYMOUTH CUSTOM SUBURBAN** (four-door, six-passenger)
ENGINE: **Fury V-800** (with Super-Pak); **318** cubic ins; **250** brake hp; **340** ft-lbs max torque; **9** to **1** compression ratio. Bore **3.91** ins; stroke **3.31** ins; Fuel required: **Prem.** Standard axle ratio: **3.31.** Wheelbase **122** ins; length **213.3** ins; height **56.9** ins; width **78.2** ins; front tread **60.9** ins. rear tread **59.6** ins. Weight **3,860** lbs. Gas tank capacity **22** gals. Turning circle diameter **42** ft. **5** ins. Tire size **8.00** X **14.**
PRICE (without optionals): $2,381.00 (factory retail)
PERFORMANCE: **0-30** mph, **3.4** secs; **0-60** mph, **10.0** secs; **40-60** mph, **4.9** secs. Top speed **100**-plus mph. All times recorded on corrected speedometer.

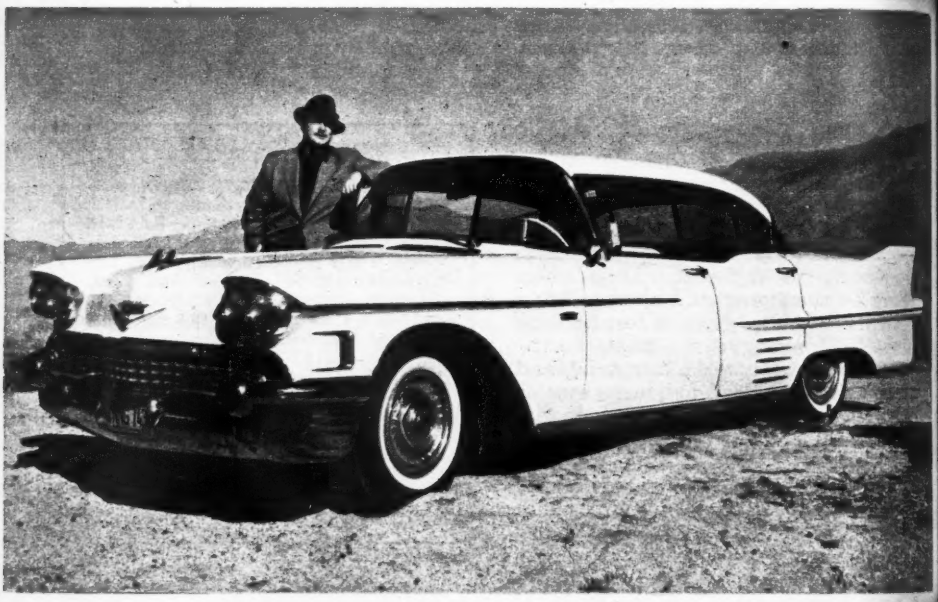


NEW FENDER FIN has taillight, brake light and turn indicator light in single unit.

McCAHILL TESTS

the '58 Cadillac

By Tom McCahill

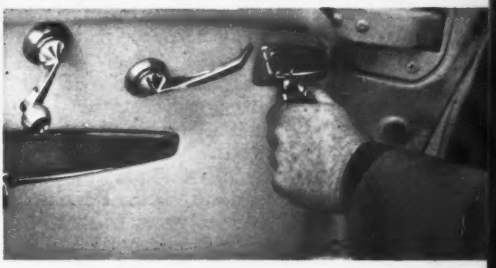


UNCLE TOM tested the '58 Cadillac "62" sedan on California's mountains and plains.

LAST fall a little guy no bigger than a keg of nails, and just as hard, slapped the middleweight title away from Sugar Ray Robinson. His name was Carmen Basilio. Three days later the new champ showed up at a field trial in a tickle-pink Cadillac convertible just like the one Sugar Ray has sported for years.

Cadillac has become a symbol of success in many fields. No other car in American history has matched this General Motors marque as the epitome of affluence for the working man, regardless of trade. Some towns such as Miami and Hollywood have been known for years as "Cadillac towns" (though in Miami a Caddy is referred to as a "Miami Ford" and in the film capital as a "Hollywood Volkswagen").

Just what made Cadillac top dog with the guys whose ships have come in and



HANDGRIP near door on either side, left, is useful for getting out of the Caddy's wide rear seat. Top photo: new ventipane window on rear door. Switch Tom is holding, above, lets driver adjust fender mirror from inside the car.

the most desired chattel of those who are still waiting? To start with, Cadillac has been a good automobile since the days of Teddy Roosevelt. At times it has been close to great and at other times close to poor. But its over-the-years batting average is good. Cadillac was once The Dream Car of the middle-income group who couldn't afford to go all the way for a big Pierce, Locomobile, Packard Twin Six or Duesenberg.

Under the astute direction of General Motors the Cadillac weathered such economic storms as the great depression and still had millions of dollars available for advertising and promotion when some of the other camps were scrounging around to meet the payroll. Cadillac has seen years when it was the best American car built, by far, but it has not seen as many of them as you might think.

The Cadillac is a good basic automobile of the luxury class. It has an excellent de-tuned engine that can be sharpened up with ease by a performance jockey such as Willy Frick. Cadillac cars have perhaps the best accessories of any automobiles made in this country. The radios sound like

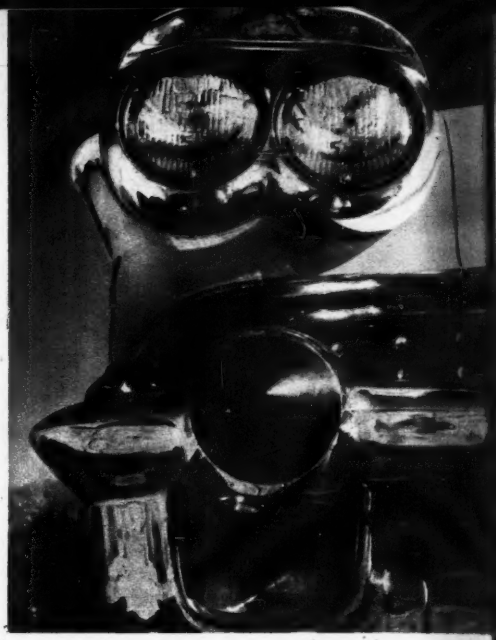
HANDLING TESTS Tom gave the '58 Caddy were about the most rugged ever, he reports.

more money than others. The heaters heat like more money and even the rear-view mirrors view like more money. But the air conditioning has yet to prove itself as outstanding. Regardless of economy runs you may have read about, the Cadillac still gets better gas mileage than most of its competition and the general appointments (which include upholstery and seats) are also of top quality. The interior room is bigger than that of its competitors and the trunk room is certainly more than adequate for anything but the six Brown Brothers with their saxes.

I picked up my test car in Hollywood, Calif. I must say that around town and over the frantic freeways the Cadillac was extremely pleasant to drive. In fact, after beating through the Smog Belt with this car for several days I was quite convinced that the '58 Cadillac had a lot to offer. It wasn't until a week or two later when, attempting to whip it across the desert at real high cruising speeds, doubts began to arise.

At normal Eastern turnpike speeds it was all right. But beyond this it developed characteristics that, to say the least, I found unusual. At 80-85 mph I felt as if I were galloping through the Derby with a loose saddle strap. I got this rig up to better than 105 mph but to say that I was happy and carefree while doing it would be the biggest overstatement since Neville Chamberlain's crack about "Peace in our time."

Our test car was the 62 four-door sedan. This is the smallest of the '58 Cadillac offerings, so if this one wouldn't handle at high speeds I doubt very much that the larger ones would. Performance (meaning athletic prowess) was hardly calculated to put stars in a hot rodder's eyes. Zero to 60 mph

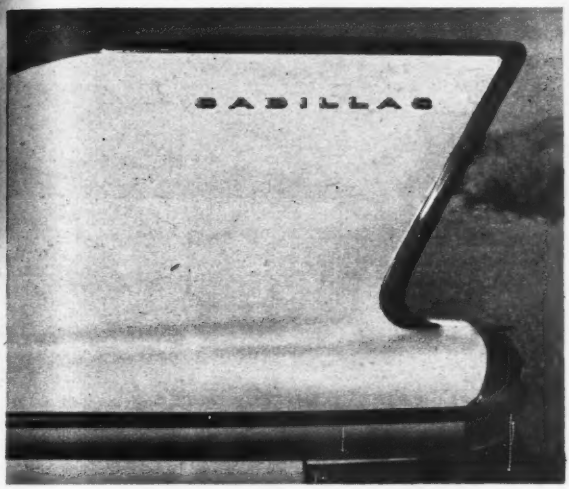


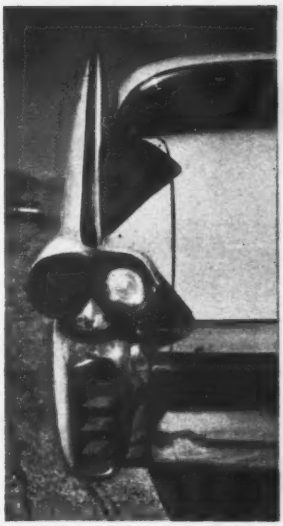
FRONT end now boasts dual headlights, redesigned bumpers, sparkling new jewel-like grille.

averaged between 11.5 and 11.8 seconds and might still give some drivers their sporting jollies. But in this day when 0-60 mph in more than ten seconds is considered senile, 11.5 can only be rated "mildly exhilarating."

From the desert I took the Caddy to the mountains and up such trails as the one that leads to Mt. Whitney. It had plenty of torque for any ascent but coming down again at speeds slightly faster than normal, I discovered the car left much to be desired, especially around sharp bends and quick switch-backs.

In brake tests it stopped fairly well but not sensationally. When I drove it over rugged terrain there was a lot of bottoming and upward jackknifing. This is a boulevard dandy and not an old cowhand from the Rio Grande. On an airstrip I made a series of hard turns that produced some interesting results. On hard right turns I ran it down to the white sidewalls and only once or twice got tipsy. But on hard left bends, the sleek and slippery bench seat broke even McCahill's solid traction and it was all I could do to keep from sliding over and banging into the passenger door. A safety belt would have been very handy for anchoring purposes on these left bends—no matter how skillful you are, a car controls





ORNAMENTS mounted on the nose of hood are slanted at a more rakish angle for '58, left above. Revamped tail fins, left, appear on all models except Eldorado Biarritz Convertible and Eldorado Seville Coupe. Rear-end treatment, above, has minor modifications from last year.

much better from the driver's side.

To get back to the over-the-ground performance, the Cadillac engine is no longer the largest in the GM camp, being passed size-wise by Pontiac and Oldsmobile. It is a basically good engine that is not only economical but completely quiet and reliable. Sooner or later, I look forward to the day when Old Proudfoot removes the Senior Statesman Suit and gets back to its hell-for-leather chaps. These cars are a far cry from the Cadillac that finished tenth over-all in the great Le Mans classic just eight short years ago. I owned one of these Cadillacs with a stick shift. For my dough, they haven't built one as good since then. As Al Smith, an old friend of mine, used to say, "Let's look at the record."

My 1950 Caddy 61 with stick shift could do an [*Continued on page* 167]

TEST CAR SPECS

MODEL TESTED: **1958 CADILLAC SERIES 62 SEDAN.** ENGINE: **V8** cyls; **365** cubic ins; **310** brake hp; **4800** ft-lbs max torque; **10.25** to **1** compression ratio. Bore **4.0** ins; stroke **3.625** ins; Fuel required: Prem. Standard axle ratio: **3.07** Wheelbase **129.5** ins; length **216.8** ins; height **59.1** ins; width **80** ins; front tread **61** ins. rear tread **61** ins. Weight **4,675** lbs. Gas tank capacity **20** gals. Turning circle diameter **43.4** ft. Tire size 8.00 X 15.
PRICE (without optionals): $4,891.
PERFORMANCE: 0-30 mph, **3.9** secs; 0-50 mph, **9** secs; 0-60 mph, **11.5-11.8** secs; 0-70 mph, **15.8** secs; 40-60 mph, **5.3** secs. Top speed **110-plus** mph. All times recorded on corrected speedometer.

EYE STOPPERS

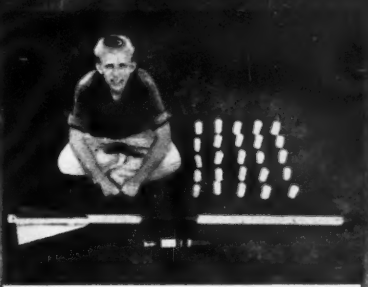
CROP HOP down in Colombia, as dangerous as it looks, sometimes resembles a bobsled run.

GUN FUN with old 20-shot and a big beam shooter formerly used by Hanging Judge Roy Bean.

FASTER PLASTER you'll never see than this outriding left leg cast. Dig the red warning flag.

BUTT HUT—a nifty umbrella to keep her cigarette dry. For outdoor girls who should be in.

HOME-MADE ROCKETS BLAST OFF



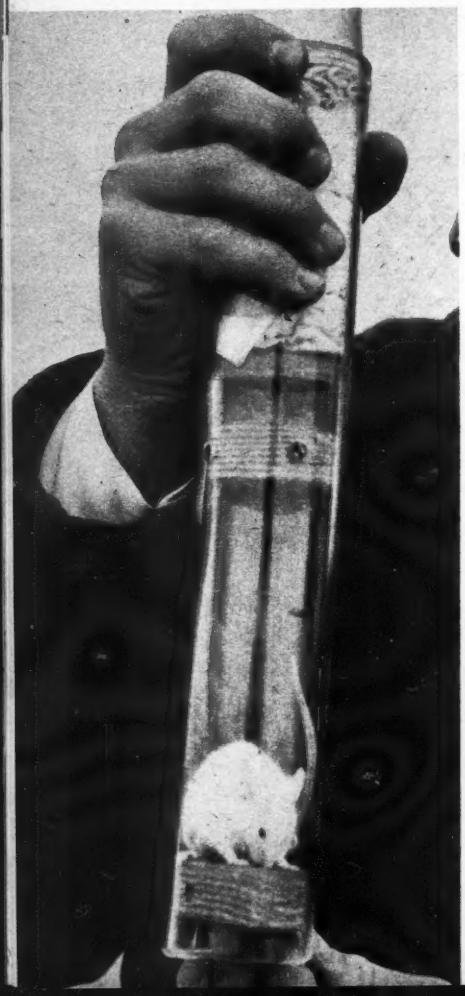
CHAMP rocket that went up a mile and its builder, Tom Lee.

GLENDALE, CALIF., may well be the world capital of juvenile rocketry. In Glendale more and more young men are getting hep to all phases of experimental rocket work—design, building, fueling, operating. Every few months 50 teenage members of the Reaction Research Society trek to the Mojave Desert to launch their home-designed-and-built rockets. At a typical meet they will

DESERT HQ of the chapter, where the club members can test their own designs.

PRIDE is inevitable, even though his rocket may prove to be a dud when he fires it.

PASSENGER albino mouse; obviously rocketry means space travel to most enthusiasts.



fire 20 or more rockets; since the founding of the chapter back in 1943, members have fired over 3,000. The rockets themselves are as simple or as elaborate as the boys want to make them. One model may cost its maker $400; another may be put together for a quarter. The average cost is $15. The young amateurs, most of whom say that they eventually want to turn pro, work on their models in bedrooms, garages, backyards and, in a few lucky cases, in well-equipped home workshops. Months of study and work, carried on singly and in weekly meetings, culminate in an adventure that generally lasts 20-25 seconds from launching to landing. Average speed of the rockets they fire is

RADIO DEVICE that parachutes to desert floor will tell him where to find rocket.

BLASTOFF—the brief reward for weeks or months of work at home.

around 500 mph.

Among the growing fraternity of amateur rocket men in this country the Glendale youths are fortunate in having a desert handy in which to fire their rockets and even more in belonging to a group that enforces safety procedures. The spirit of try-and-try-again is something the boys all have, so when a two stage rocket fails or a rocket-borne camera is smashed to bits, these disasters only whet their enthusiasm. •

OBSERVERS follow safety procedures as they intently watch launching preparations.

POST MORTEM on remains of once proud rocket. Boys take failures philosophically.

SNORING at the scene of the accident drew attention to Tim, who was taken for the driver of the ill-fated milk wagon.

HOW TO STOP

By Lester David

YOU can be divorced, clobbered with a shoe or exiled to the attic for snoring. Heavy snorers have been charged with disturbing the peace. But Tim MacPeak is probably the only man in history who ever got rich by snoring.

Tim, a Michigan railroad worker, was stretched across the tracks one dark night, snoring blissfully. Tim's face was a mess—he had been in a brawl. Shortly after midnight, a milkman tried to beat a train to the crossing nearby but he never made it. His wagon was smashed, but miraculously, the driver was unhurt and disappeared into the night.

When rescuers arrived, they hunted vainly for the driver and were about to leave when one man heard a drone, high-pitched and rhythmical, coming from down the tracks. They picked their way to the sound and found Tim, snoring lustily. Because of his bloody face, everyone assumed he was the one hit by the train.

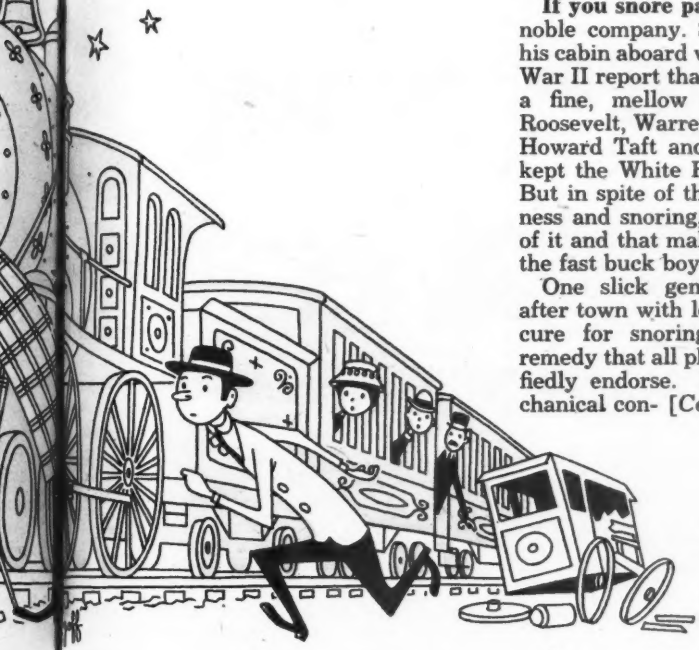
Next morning, Tim opened his eyes in a hospital to see a worried railroad claim

agent waving two papers in front of his face. One was a check, the other a waiver form. Tim took the first and signed the second. Then, a beatific smile on his face, he turned around and went back to sleep. Snoring lustily, of course.

Maybe you won't get rich but chances are you've got something in common with Tim. That's snoring. An eminent nose and throat specialist in New York told me that close to 100 per cent of the population honks, wheezes, rasps, snorts and buzzes to some degree while sleeping. (Yes, *you too.*) He adds that the really horrendous snorers, the kind who shiver the timbers with their musical sleep, are more rare. These come one in every 100, or about 1,600,000 throughout the country.

If you snore passably well, you're in noble company. Seamen who guarded his cabin aboard warships during World War II report that Winston Churchill is a fine, mellow snorer. Franklin D. Roosevelt, Warren G. Harding, William Howard Taft and Teddy Roosevelt all kept the White House merry at night. But in spite of the link between greatness and snoring, snorers are ashamed of it and that makes marks of them for the fast buck boys.

One slick gentleman flooded town after town with leaflets reading: "Sure cure for snoring! Here is a simple remedy that all physicians will unqualifiedly endorse. No medicine, no mechanical con- [*Continued on page* 174]



SNORING

CURES for snoring are, from the feminine viewpoint, designed to relieve the audience rather than the musician. The irritating thing about snorers is that they just won't believe that they really cut wood at night.

a new angle.....
ROUND HOMES!

CAPPED with a plastic dome atop its open sky rotunda, a model home at Country Estates, Roslyn Hills, N. Y., boasts a unique circular design. The curved portico leads through the foyer to the rotunda—a wood-paneled hub 13′ 6″ in diameter. Off this rotunda, like slices of a pie, are a spacious den, living room and dining room. The rest of the house is in a more conventional rectangle pattern and includes four bedrooms and two baths. Thus far the circular home has proven very popular with the more than 125,000 visitors who have come to see it. It is said to have outsold the other six models of the colony—ranch, split-level and two-story dwellings, all of conventional design—by 50 per cent. Architect Michael Radoslovich designed the unusual $44,900 round house which people seem to like or dislike strenuously. How about you?

CIRCULAR home in Roslyn Hills, N. Y., has portico, below, with arched vaulted overhang to shelter callers in bad weather.

STANDING in rotunda, left, you are facing dining and living rooms. Sliding glass wall opens to terrace off the dining room.

ROUND HOUSE is on one-third acre plot, left below. Exterior is California redwood blended with brick and wood shingles.

DINING ROOM, below, has 18-ft. 3-in. perimeter for entertaining in formal or buffet style.

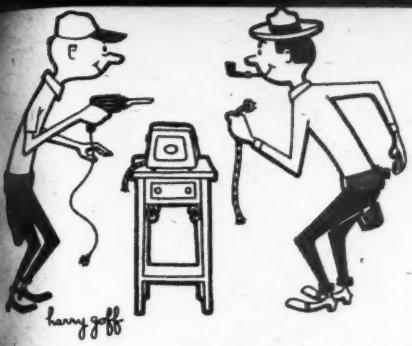
LIVING ROOM, below, has sweeping 33-ft. perimeter and arched vaulted ceiling, two vast windows and four smaller ones to let in outdoors. Seidenwurm & Schwartz are the builders of the unorthodox model home.

FORD'S 25,000,000TH V8

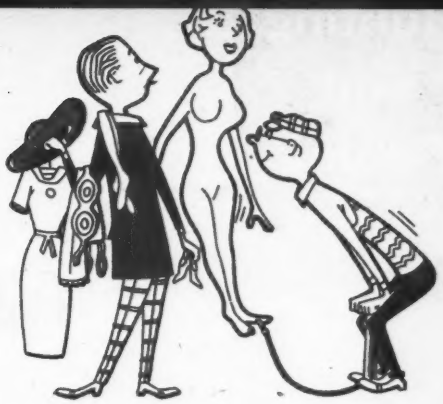
HENRY FORD'S quiet but formidable belief that anything could be mass-produced created one of the wonders of the year 1932—the first V8 engine to come off the line. No one but Ford had believed that the complicated V8 block could be cast in one piece. If you look carefully at the picture of Ford with the first engine you may detect something like a smile. Above, we have the 25,000,000th V8 posing unsentimentally with Number One, an Edsel, a '32 V8 Ford and the usual girls. •

NOVEL WATER SKI LAUNCHER

DRY LAUNCHING the well-dressed skier is now possible with the new Launchcraft hydraulic launcher, which lets skis down back end first. To bring skier aboard the motor is cut and the towline slowly reefed. •



HOLSTER that is insulated to hold soldering gun. It could be quickly, easily drawn when needed. Melvin Adelglas, Flushing, N. Y.

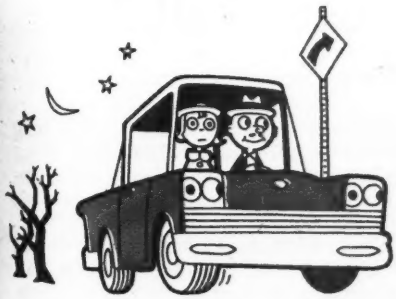


INFLATABLE MANNIKINS for department stores could be deflated and neatly stored until needed. Michael Millard, Vienna, Ohio.

PRE-CEMENTED BRICKS would only have to be moistened before being set by happy home owner. Charles Gayton, Pueblo, Col.

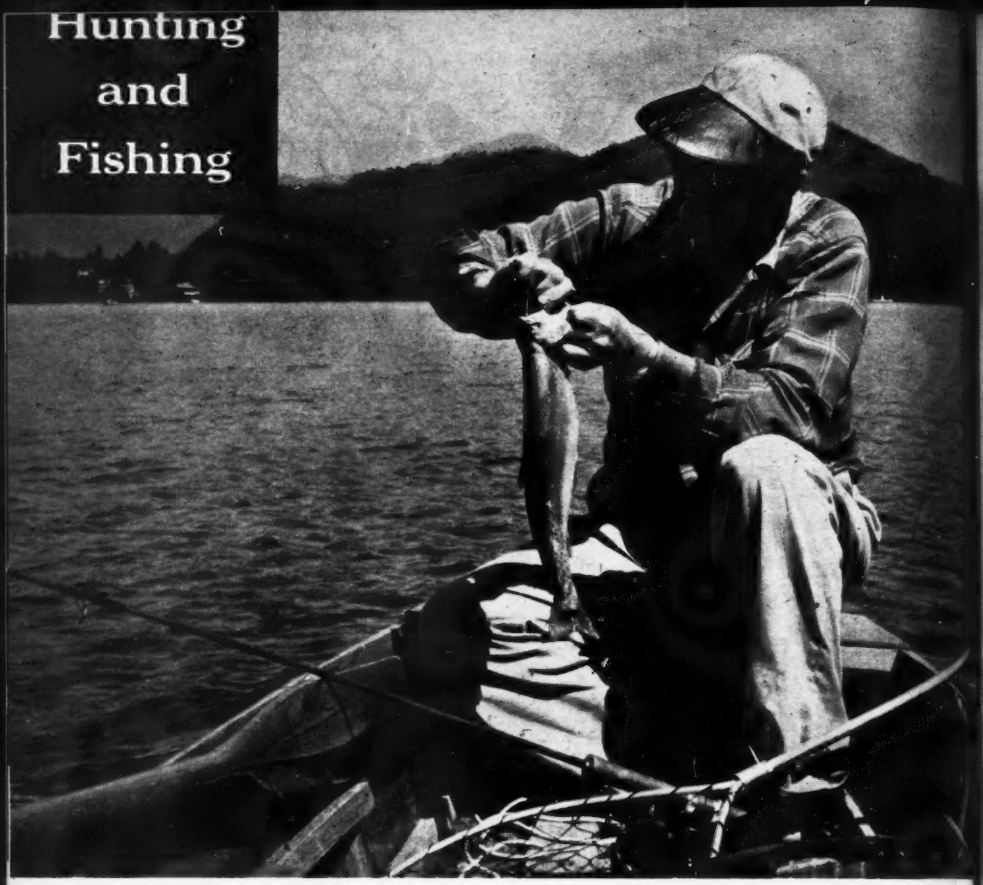
INVENTIONS WANTED!

Is there a gadget you think should be invented? If so, send its description to Inventions Wanted Editor, MECHANIX ILLUSTRATED, 67 West 44 St., N.Y. 36, N.Y. Each one printed will be awarded $5.



TWO LIGHTS on four-lamp cars that turn with front wheels, illuminate road ahead. Carl Schmoocks, Wisconsin Rapids, Wis.

HEADPHONES for car radios so that those who like music can listen without disturbing others. G. Bateman, Toronto, Canada.



BOAT FISHING is called for when the surface warms and the trout go out deep.

SPINNING FOR BIG TROUT

By Wynn Davis

THERE is no easier way for the novice to learn trout fishing than by acquiring a good spinning outfit. After 15 minutes of instruction and an hour of practice he can make long and accurate casts and start catching the big ones. He can graduate to fly fishing later.

The reel makes spinning. The best imported reels cost around $40. There are good domestic ones at around $25 but I would go no lower. The spinning reel does not turn; the line spirals off a stationary spool, making possible long casts with light lures. They are all but foolproof—no backlash—and a beginner with a spinner can cast farther than most fly casters.

Most spinning reels take 100 yards or more of line. I recommend DuPont monofilament three or four-pound test. That gives you plenty of line the fish can hardly see and almost no wind resistance. Set the reel drag so it gives line at a pull just under the pound test of the monofilament and let the fish

wear himself out—don't try to horse him in.

The rod should be about seven feet long with plenty of action and a nice feel in your hands. Rods range from $10 up to $100. As for lures, limit yourself at first to feathered spinners and wobbling spoons in copper, brass and silver. They cast like bullets and often catch fish no matter how you handle them. Get them in light, medium and heavy.

In April when the streams are high, cold and roily you'll find the big trout in the big, warmer holes well downstream. Use lures heavy enough to swim deep and true, without surfacing or darting to the side in a fast current. You seldom need to wade when spinning; approach the pools carefully and cast into the tongue of the current where it enters the pool. Fish the edges of the tongue between the current and the slower water, then try the center of the current and any rocks or trees along the banks.

As the waters clear up and begin to drop, try casting upstream, letting the lure flutter towards the bottom and sweep naturally down to you. Often you can get a big fish this way when he wouldn't look at a lure cast any other way.

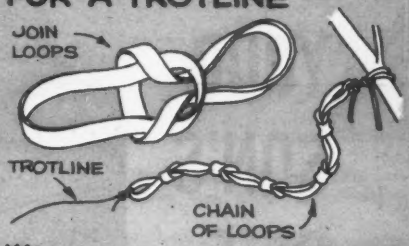
Many streams have large quiet pools with overhanging alders; if deep enough they can hold mighty trout. Here you need a light lure, a wobbler or spinner with a blade so sensitive it will spin with the slightest motion. I use one-sixteenth to one-eighth ounce lures in this kind of water. They make little spash and flutter lightly to the bottom, don't frighten the fish in still water. Be sure to fish the entire pool, starting with the banks.

Some of the best early fishing for beginners is in lakes, where you can find brook trout, rainbows and lake trout. Just after the ice goes off, the fish come in shallow for a 10- to 20-day spree. Use a lure heavy enough to get way out and flutter to the bottom fast. Let it lie for a count of ten, then retrieve slowly. Fan out your casts in as wide a pie wedge as possible. If no smashing strike ensues, try a fast retrieve just under the [*Continued on page* 168]

SPORTS TIPS

BY HAL SHARP

RIG A SHOCK ABSORBER FOR A TROTLINE

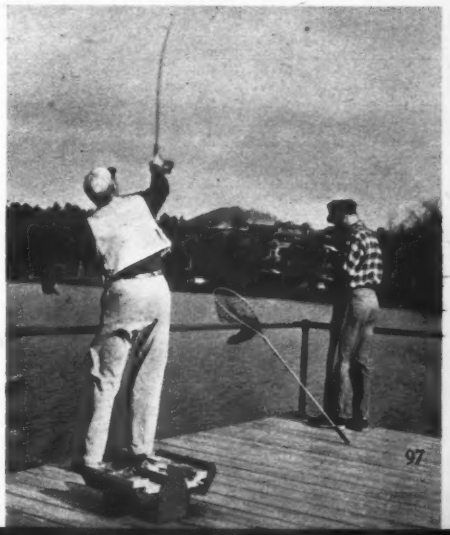


WHERE TROTLINES ARE PERMITTED FOR CATFISH, ET CETERA, A LARGE FISH MAY BREAK OFF IF THERE ISN'T ENOUGH "GIVE" IN THE LINE OR THE BRUSH WHERE IT IS TIED ON THE BANK. DON'T LET IT HAPPEN TO YOU.

FROM AN OLD INNER-TUBE, CUT SEVERAL LOOPS ABOUT ONE-INCH WIDE--WIDER FOR THE LARGEST "CATS." MAKE A CHAIN OF THE LOOPS, ABOUT FIVE FEET LONG. TIE THIS BETWEEN TROTLINE AND A HEAVY WILLOW BRANCH ON THE BANK.

THIS CHAIN STRETCHES AGAINST THE STRUGGLES OF A HOOKED FISH AND SNAPS HIM BACK WHEN HE RELAXES--HE WILL SOON QUIT FIGHTING.

INSHORE is the place for hungry trout just after the ice has melted in the lake.



MAKE YOUR SON'S BIKE SAFE

FORK ASSEMBLY is tightened here. Freeport, N. Y. police cooperated on these bicycle safety photos.

FRONT WHEEL BEARINGS should be cleaned annually with kerosene, paintbrush.

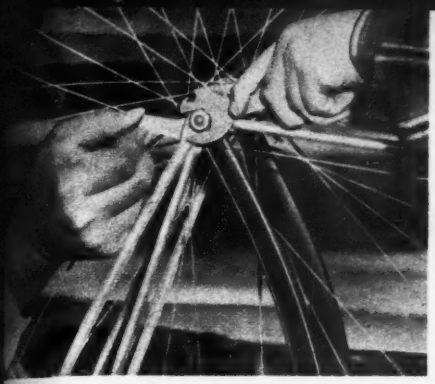
WITH spring just around the corner, it's time to give your son's bicycle that yearly checkup to make sure it is in top-notch mechanical condition.

Maintenance of the two-wheeler is highly important. Last year there were more than 25,000,000 bikes on the road and 35,000 cyclists were involved in accidents. Death claimed 480.

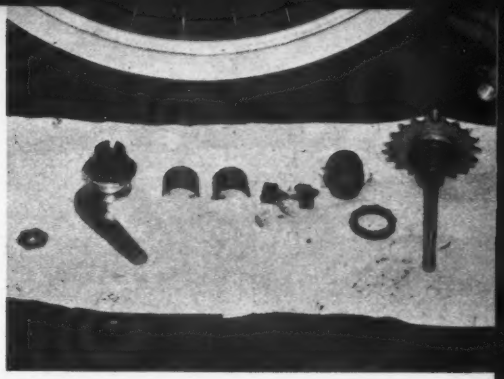
Aside from the safety angle, a breakdown on the road can spoil the fun. Take a little time fixing up now. It is well worth the effort. To help you get off on the right pedal, here is MI's checklist of trouble spots to make Junior's bike road worthy.

Fork assembly controls steering so check it for looseness. Examine nuts at handlebars and seat post to see that they are tight and bars rigid. Use No. 20 oil on nut that adjusts and locks bearing tension in the fork.

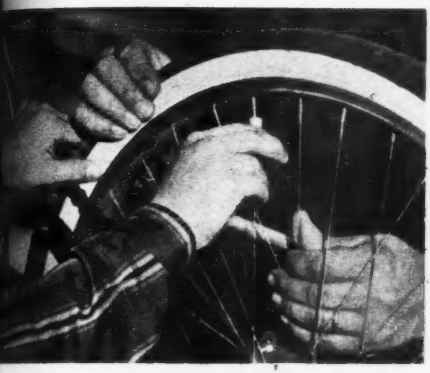
Disassemble and lay out nut, washer, cone, bearing [*Continued on page* 172]



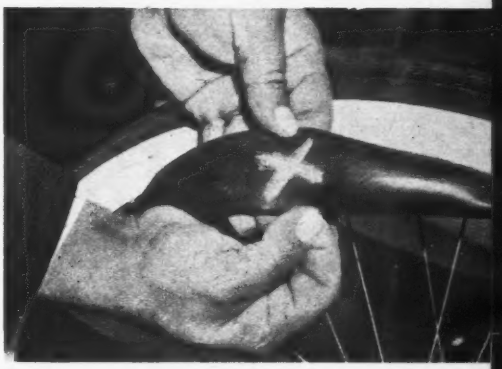
WHEEL WOBBLE is overcome by tightening bearing cones. Don't make them too tight.



REAR WHEEL HUB should be disassembled, cleaned, oiled. Keep the parts in order!

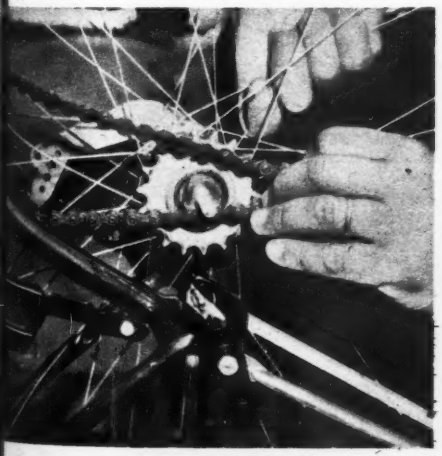


MISSING SPOKES should be replaced, loose ones tightened, wheel alignment checked.

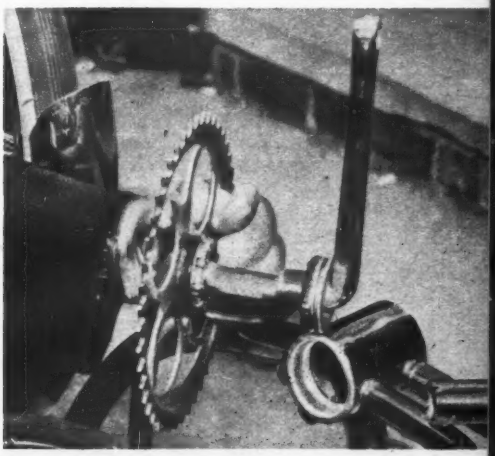


TUBE can be repaired without taking tire from rim. Switch your tires periodically.

CLEAN CHAIN in kerosene, oil lightly. Adjust tension. It should sag about half-inch.



CRANK HANGER bearing. Clean once a year. It should be oiled four times annually.



MECHANIX ILLUSTRATED
BRIGHT IDEA AWARD

SNAP-ON BUTTONS connect to sock of reinforced nylon and heavy wool. Wire leads to case.

ELECTRIC SOCKS

COLD tootsies should bother you no more. Just slide them into a pair of electric socks sold by The Campus Co., 155 E. Ohio St., Chicago 11, Ill. Perfectly safe, these socks are made of reinforced nylon and heavy knit wool. They heat via two six-volt batteries carried in a compact case that attaches to your belt. Available in Small, Medium and Large sizes, they cost $15.95 a pair, minus the batteries. •

WIN $50

MI will award $50 each month to the first person who tells us of a new and useful gadget that is patented and in production. Manufacturers are also eligible for this award. Pictures and a description should be sent to Bright Ideas Editor, Mechanix Illustrated, 67 West 44th Street, New York 36, N. Y.

BATTERY CASE, at left on belt. Top sock, right, is inside out to show how the lead wires from the battery run down the sock to the toe cap.

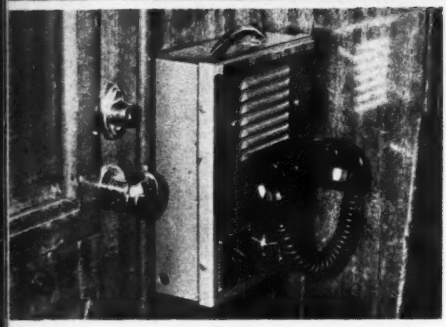
SPECIAL *Boating* SECTION

TOM McCAHILL'S *Fabulous Cruiser*

UNCLE TOM, an old hand afloat, laps up luxury when not testing cars for MI.

MI's Tom McCahill, generally considered America's foremost automotive authority, is also the expert skipper and owner of a 30-foot cruiser, *The Rooster,* which he believes is the best-equipped craft of its size afloat.

As befits a man who makes his living by driving automobiles as fast as they can go, *The Rooster* is no slouch in performance. Although possibly



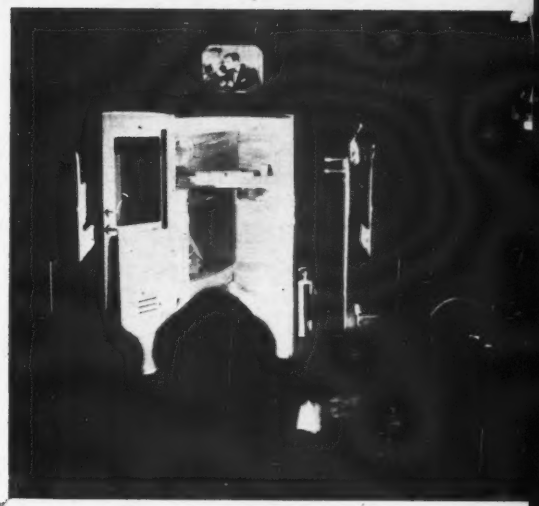
RADIO-TELEPHONE, top photo, is located in the cabin. Extension, above, is on the bridge. McCahill in bunk, below, tunes in on short-wave radio.

TV ANTENNA is in stern. Bike at right is for on-shore jaunts when the Rooster is dockside.

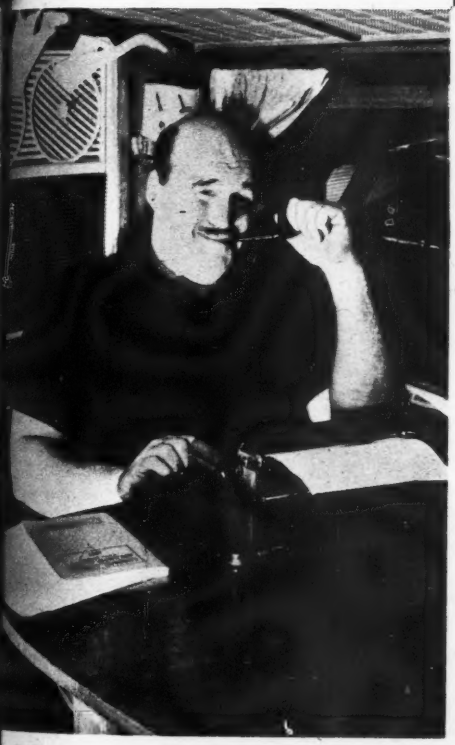
not capable of taking off "like a homesick gazelle with a tailful of wasps"—as Tom once described an especially hot car—*The Rooster's* twin 125-hp Chrysler engines have been gently souped up by Old Chrome Dome to give his craft a cruising speed of 18 honest miles per hour and a top speed somewhere between 23 and 25.

As for its equipment for luxurious life on the ocean waves, Uncle Tom has spent about half the original cost (around $11,800) of the boat on accessories. They include a pressure water system, fresh water windshield wipers, an electric head (bathroom to us landlubbers), air conditioning, a radio-telephone and a television set. *The Rooster's* double-capacity water tanks, all of Monel metal, hold 45 gallons as against the standard 20.

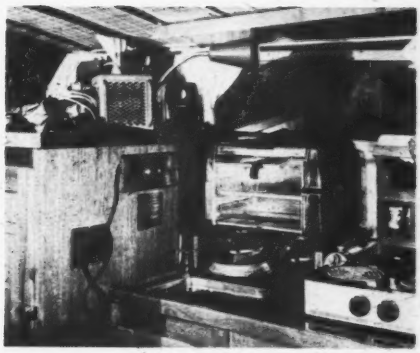
Uncle [*Continued on page* 169]



THE ROOSTER'S sailors watch TV at night. Craft can do New York-Florida run in ten days in any kind of weather.



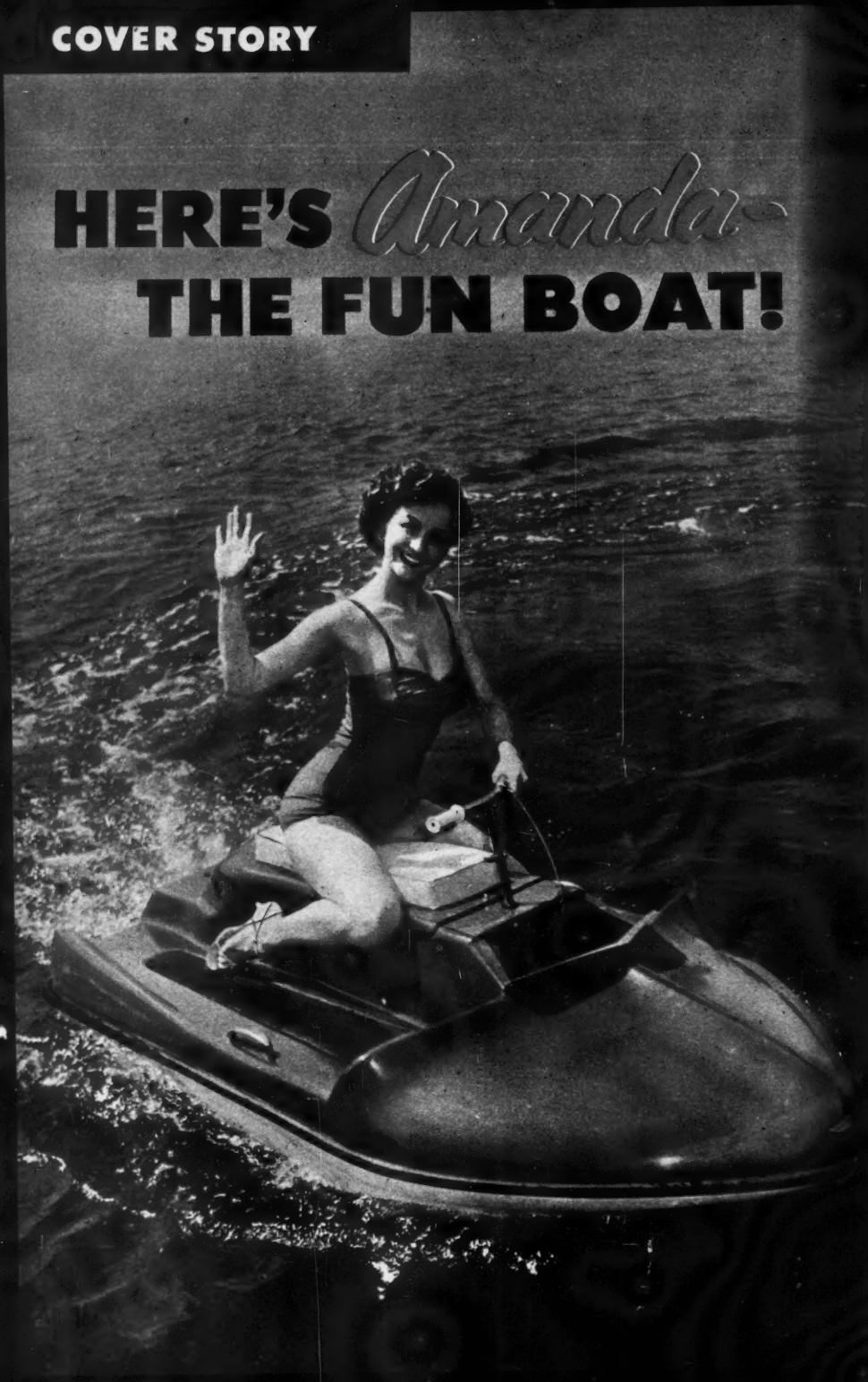
McCAHILL at work, above, keeps cool with cabin air conditioner behind him. The jaunty Rooster sails off to the races, right, with Tom & Co. aboard.



GALLEY has two-burner electric stove, electric toaster, rotisserie and fan-driven Arvin heater which warms cabin on winter cruises.

COVER STORY

HERE'S *Amanda*— THE FUN BOAT!



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CUTE TRICK, sporty but easy to handle, Amanda is 6 ft. 10 in. long, 3 ft. 10 in. in the beam. The clutch is automatic and steering is feather-light, so anyone can drive it. Glass-fibre hull is very nearly sinkproof and almost impossible to capsize.

THE Amanda water scooter, a British product equipped with a compact, rugged power and transmission unit built by Vincent Engineers, is a cross between a pair of water skis and the famous Vincent motorcycles that have smashed records at Bonneville. Almost capsize-and-sink-proof, Amanda has a single motor control—a twist-grip throttle on its handlebar steering gear. An automatic clutch engages as engine revolutions increase—just as in a modern car—and automatically disengages should the rider release the grip. The glass-fibre hull will take a lot of punishment from sun and sea water. Amanda is good fun for people with no waterside base, as it goes easily wherever you do by car. The inboard engine can be removed for safekeeping as easily as an outboard. It has no exposed moving parts in which to catch a finger or a ham sandwich or anything else that finds itself in the surprisingly generous storage space. Amanda uses from one to four pints of fuel an hour, tops out at 6 mph. The U.S. distributor is the Arnolt Corp., Warsaw, Ind. •

MAXIMUM LOAD is 300 lbs. Stability is demonstrated at right, below; he stayed perfectly dry, incidentally. Maker claims Amanda can be used with equal confidence on lake, river or ocean. Engine's builders are famous for record-breaking motorcycles.

"LESS THAN THE COST OF A CAR"

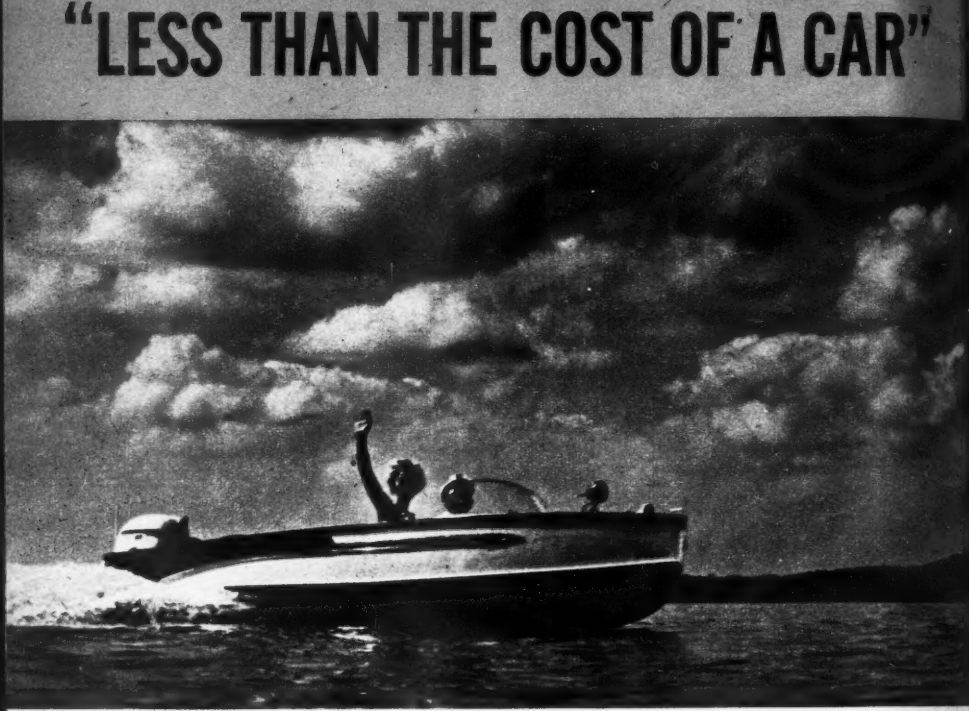


Photo by Everett C. Johnson

Here's a complete breakdown of what it will cost you to buy, operate and maintain a boat that can offer a recreational outlet for the whole family.

By Hank Wieand Bowman

The automobile used to be fun. Now it is more of a necessity. Crowded highways have taken most of the pleasure out of driving and millions of Americans are turning to the open waters where, for less than the cost of a car, a fine boat and motor will provide recreation for a whole family. Also, unlike the car, the boat and motor have a far longer life and the annual de-

LOW-COST LAUNCHING is available at local marinas if trailer launching is impossible.

preciation is considerably less. While three or more cars may go by the boards in ten years, the boat and motor should still be serviceable.

The outboard boating fan entering the sport for the first time naturally wonders what he will have to invest and what it will cost to operate his outfit for a year. It has been estimated that close to two billion dollars were spent at the retail level for boats and related items in 1957. This sounds like a staggering sum but it isn't quite so overwhelming when you realize that it was split among the owners of more than seven million pleasure boats operating in North America. Of course, neither of these two figures offers you any particular hint as to just how big a chunk may come from your own pocket, so we'll break it down further.

BOATING is now a family thing. With a cruiser like the Scottie-Craft shown, and a 50-hp Evinrude, anything from vacationing to water skiing is possible.

For the purpose of illustration we have selected two typical outfits that fall within the "less than the cost of a car" category. The first of these is a 14-foot utility which, because of its size and power, will have certain limitations. It is fitted with a minimum of accessory items, has no lush

LARGE RUNABOUTS like the Feather Craft Clipper call for heavy-duty trailers such as this Gator model which has a rated load capacity of 1000 pounds.

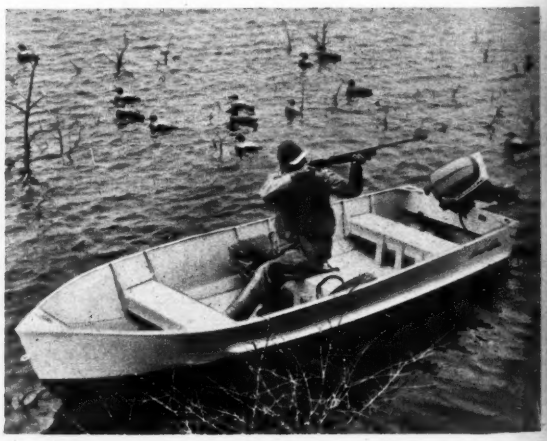
SKIN DIVING, a rapidly growing related sport, isn't as difficult or daring as many people think and lends confidence valuable to boatmen.

upholstery, no seat backs, a short foredeck and is not equipped for night operation. The power is a motor in the 16- to 20-hp range with tiller bar steering and the price will be $350 to $410 for a top-quality new motor of this type. The boat will cost from $180 to $450, depending upon the design, workmanship and material from which it is constructed. Selecting an approximate mean for boat and motor cost, we come up with the figure of about $700 for the two.

In order to give flexibility to our boating we'll need a trailer. The boat in the 14-foot class, depending upon the material of manufacture, may range in weight from 125 pounds to 400 pounds. For our purpose we'll assume that it weighs 250 pounds. The motor will weigh from 75 to 80 pounds. Thus the trailer must be sturdy enough to carry a load of at least 325 pounds. But to this we must add a six-gallon fuel tank weighing 50 pounds loaded, a 50-foot length of ¼-inch manila for anchoring and mooring and a 6- to 10-pound mushroom anchor. And since we may want to carry camping gear and other items in the boat when trailing over the road, it's wise to invest in a trailer with a 600- or 700-pound maximum carrying capacity. For our typical unit we selected a 600-pound trailer and paid $170. Our anchor and line cost $6.25.

If we intend to carry four people in the boat we'll need at least four Coast Guard-approved life-preserver cushions costing about $5 each. And a small pressurized-type fire extinguisher ($3) is as necessary as the set of basic tools we'll carry along. These will include a Phil-

BIG FISHERMAN is the name of this 14-ft. Lone Star model but it serves the hunter too. Aluminum, it weighs 133 pounds, can be carried on car.



CROSBY CAPRI typifies our 16-ft. budget boat. As shown, this Fiberglas hull is $1069; electric-starting Evinrude Lark sells for $649.50.

lips-head and standard screwdriver, a pair of pliers and an adjustable wrench. We'll want to have a couple of spare spark plugs too, as well as a $5 paddle to use for fending off from the dock. So, the total expenditure is a little more than $900.

Now let's take a look at another sample outboard package. This one will be a 16-footer with a motor in the 30- to 40-hp range. It's a twin-cockpit job with upholstered seats, front-cockpit steering, wraparound windshield and a folding top for protection from the elements on longer excursions.

An average well-equipped 16-footer built of quality materials will cost about $1200. With this more luxurious rig, we will also want an electric-starting motor which costs about $700. Also, since the boat and motor are heavier, we'll need a winch-equipped trailer sturdy enough to support at least 750 pounds. Such a trailer will cost about $300.

The required accessories, such as anchor, mooring lines, a couple of fen-

INLAND WATERS often require a boat no bigger than this 13¾-ft. Feather Craft; it's $328. A 7½-hp Evinrude Fleetwin is $270.

OFFSHORE FISHING is possible in large cruisers like this 18-ft. Lone Star model; it has high freeboard, takes two outboards.

WITH A TRAILER, an outboarder is free to travel any waterway in the country. Glasspar makes boat shown, a Fiberglas 15-footer.

sive is it going to be to operate the boat?

First, I would suggest that you have your boat insured. Boat insurance today is no more difficult to arrange than automobile insurance, is somewhat cheaper and every bit as important. The loss of your boat and motor through accident or theft will be a major consideration since you will have a fair amount of money invested. However, of far greater impor-

ders for docking protection and life preservers will call for a minimum outlay of $50. Since we will plan to keep the motor on the boat at all times because of its weight, and since the boat and trailer may be too long or too bulky for garage storage, let's plan on a tailored boat cover so we can keep the rig outside and still protect it from the deteriorating effects of exposure. A top-quality cover will cost about $35 to $50. So, for our basic 16-foot sports runabout, better plan on an expenditure of $2300. But how expen-

ECONOMY-MINDED people can assemble this 16-ft. Luger Caliente from a kit which is priced at only $234.75 with freight paid.

Luger Industries, Inc., 3404 Lyndale Ave. S., Minneapolis 8

JOHNSON MOTOR rated at 18 hp has sufficient power to pull a single skier; it sells at $475. Boat is a 12-ft. Fiberglas model made by the Winner Mfg. Co., W. Trenton, N. J.; $485.

tance is liability insurance. Just as you may cause physical injury or property damage in an automobile, so may you in a boat. It's no rarity for the outboarder to operate on the same waterway with a $14,000 to $40,000 luxury yacht and, out of control, he could send one of these dream boats to the bottom in a matter of minutes. So don't view this insurance thing lightly. Typical coverage of your boat, motor and equipment on a $25 deductible basis will cost about $4 per $100 per year and $10 per $100 for three years. This pre- [*Continued on page* 143]

MODERN OUTBOARDS are rugged. Big Mercury has shock absorbers, kicks up at top speed without damage to itself or a boat.

TYPICAL of the 14-ft. boat used as an illustration in the text, aluminum Arkansas Traveler Explorer is $295; 16-hp Scott-Atwater is $404.50.

WELL-EQUIPPED MARINAS along favorite boating routes not only provide fuel but are handy spots to get food, bait, ice, water and other items.

Johnson photo by Dick Matt

Boats LESS THAN $2500

HOLIDAY, a 16-ft. aluminum hull with an 80-in. beam, has a 20-in. transom, is $995. The 40-hp electric-starting Mercury with an extra-long shaft costs $685.

Lone Star Boat Co., Box 698, Grand Prairie, Tex.

FIREFLITE is 15 ft. with a 66-in. beam. Fiberglas, it's sold equipped as shown with upholstered seats for $845. Power here is a 35-hp Johnson with electric starting and key switch; price, $585.

Standard Glass Products, Inc., Austin, Tex.

RUNABOUT is aluminum, has an overall length of 14½ ft. and a beam of 62½ in. The motor is a 35-hp Fageol vertical inboard which gives speeds up to 30 mph. Cost, complete, $1,850.

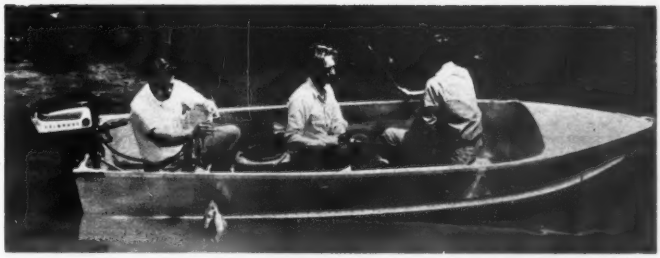
Grumman Boats, Inc., Marathon, N. Y.

NOMAD can fill the bill for fun, fishing or duck hunting. It's 12 ft. long, has a 46-in. beam and is constructed of Fiberglas with built-in flotation; cost, $290. Motor, a 10-hp Johnson speeds it along, is priced at $310.

Glass Magic, Inc., 2759 Ludelle, Fort Worth, Tex.

ROCKET is constructed of Fiberglas, has an over-all length of 14 ft. and a 63-in. beam. Equipped with windshield, hardware and steering, it sells for $940. An 18-hp Evinrude is shown on the boat; it's $395.

Shell Lake Boat Co., Shell Lake, Wis.

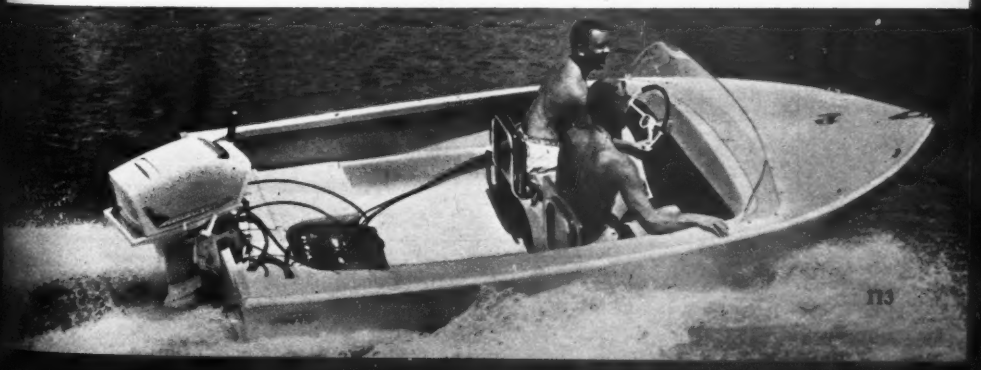


FISHER is a 13¾-ft. aluminum hull with a 55-in. beam. Anodized for protection in salt water, it is $328; plain, it's $310. The 7½-hp Evinrude Fleetwin is $270.

Feather Craft, Inc., 450 Bishop St., N. W., Atlanta 13, Georgia

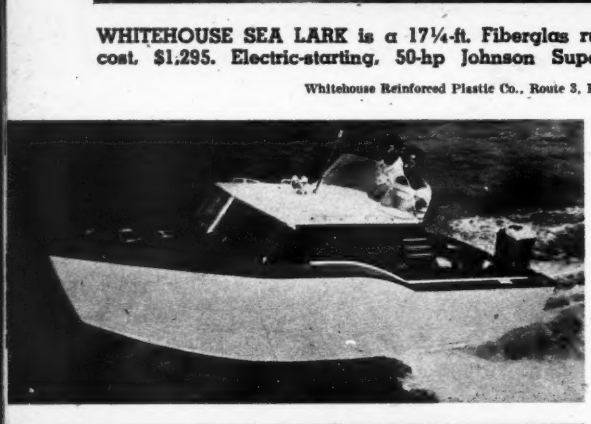
WIZARD UTILITY takes motors up to 40 hp. Fiberglas, it is 13½ ft. with a 63-in. beam; $535. Electric-starting 22-hp Scott-Atwater is $563.50; manual is $448.50.

Wizard Boats, Inc., Box 246, Costa Mesa, Calif.



WHITEHOUSE SEA LARK is a 17¼-ft. Fiberglas runabout with an 84-in. beam; cost, $1,295. Electric-starting, 50-hp Johnson Super Sea-Horse sells for $840.

Whitehouse Reinforced Plastic Co., Route 3, Box 219, Fort Worth, Tex.



CAPRI is 17 ft. with a 76-in. beam, has room for bunks, galley and head in the cabin where there is sitting headroom; price of a kit is $555.50. Cost of 60-hp Mercury motor is $730.

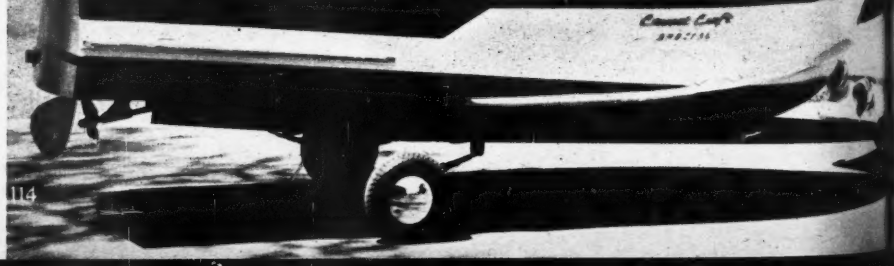
Custom Craft, Buffalo 7, N. Y.

WOLVERINE has molded plywood inner hull with lapstrake planking outside. The 16-footer has a 76-in. beam, is $795. Engine is a 50-hp Evinrude Starflite at $840.

Wagemaker, 566 Market Ave., S. W., Grand Rapids, Mich.

THUNDERSTREAK SPECIAL has a 70-hp Gray inboard installed. It is 14¾ ft. long with a 5¼-ft. beam. Planking is plywood on mahogany frames; price, as shown, is $1,927.

Correct Craft, Inc., Orlando, Fla.

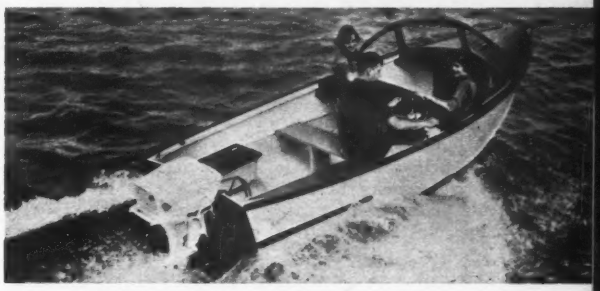


OLYMPIA MODEL F-17 is sold in kit form for $395; completed boat is $895. It is 16 ft. long with a 6¾-ft. beam. Electric-starting 40-hp Scott-Atwater motor sells for $663.

U-Mak-It Products, Deland, Fla.

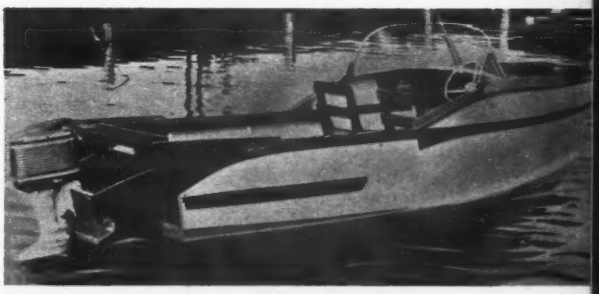
BRISTOL BLUEFISH is a 16-ft. hull with a 68-in. beam. Built of mahogany with birch ply planking, it sells for $610. Scott-Atwater electric-starting 40-hp engine is $663.

Bristol Boats, Bingham, Maine



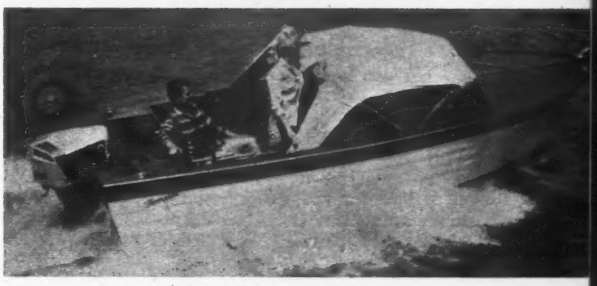
SHELCRAFT SPORTSTER is 18 ft. with a 76-in. beam. There are two 6-ft. bunks under the raised deck; cost is $960. Mercury is a 40-hp model with manual starting; $535.

Shelcraft, 15th and Crosby, Chester, Pa.



OFFSHORE FISHERMAN is lap-straked, has an over-all length of 18¼ ft. and a beam of 82 in. With windshield, steering wheel and lights, it's $1,375. Evinrude Starflite motor (50 hp) sells for $840.

Thompson Bros., Ann St., Pestigo, Wis.



RAISED-DECK CRUISER comes in kit form, can be assembled in an average of 50 hours. It's 18 ft. with a 92-in. beam; price, $475. The 40-hp Scott-Atwater Electric is $663.

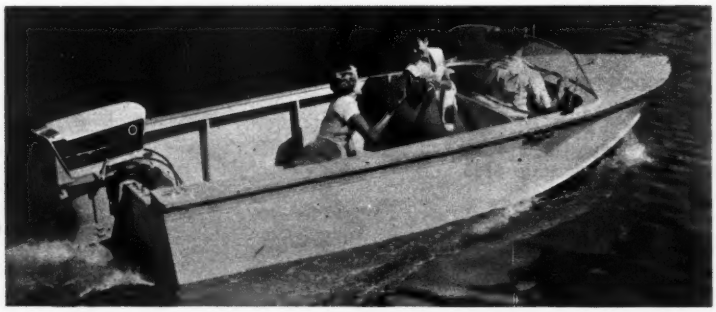
Taft Marine Woodcraft, 636-39th Ave., Minneapolis 21

WAGEMAKER PLYLAP hull is 17 ft. with a 75-in. beam, has 30-in. depth amidships and a capacity of six adults; the cost is about $1,200 with hardware and windshield. 40-hp electric-starting Royal Scott: $749.

Wagemaker Co., 566 Market St., Grand Rapids, Mich.

SENATOR is a nine-passenger 16-footer with a 79-in. beam. Built of 5-ply mahogany marine plywood over mahogany framing, it's $1,695. The electric-starting Johnson Super Sea-Horse is a 35-hp model at $625.

Ransom F. Shoup & Co., Ahoskie, N. C.



GAMEFISHER is plywood planked, has roomy cockpit. It's 16 ft. with a 77-in. beam; cost, $850. Electric-starting 35-hp Evinrude Lark is $625.

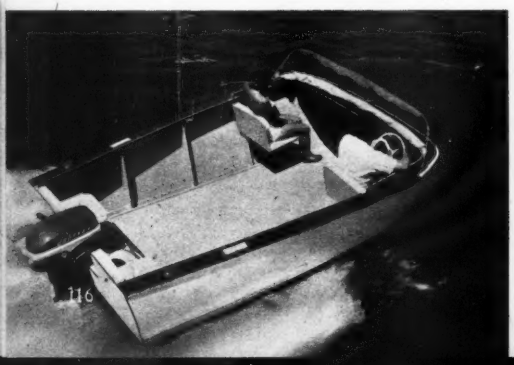
Higgins, Inc., Box 8001, New Orleans, La.

VENTURA is an 18-ft. kit boat that will take engines up to 80 hp. A large cockpit makes it fine for the fisherman and skin-diver. Complete kit is $424.50. The 35-hp manual-starting Johnson Sea-Horse is $495.

Boat Kits, Inc., 3404 Lyndale Ave., S., Minneapolis 8

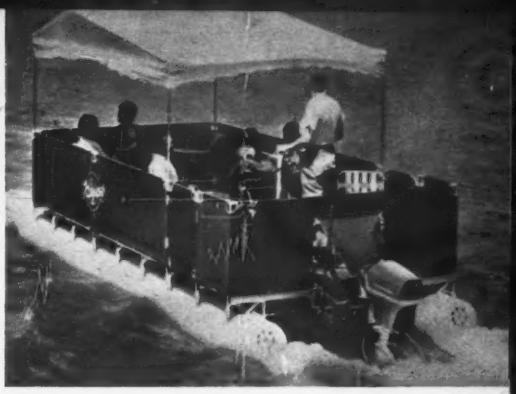
FERBEND CRUISER has plywood planking, weighs 975 lbs. It's 18¾ ft. long, has a 90-in. beam. Two can sleep comfortably in the cabin; the price is $1,895. An 18-hp Johnson with electric starting costs $475.

S. U. Ferbend, Inc., Morganfield, Ky.



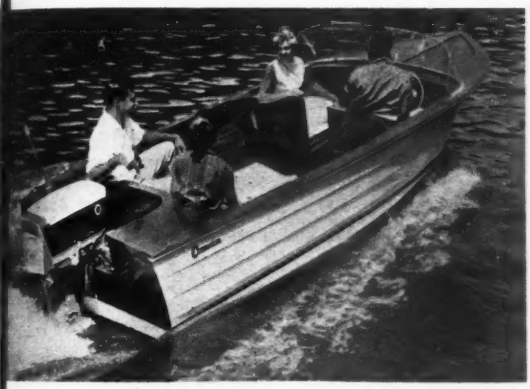
CLIPPER has modified V bottom, is made of anodized aluminum. It's 16 ft., has a 73-in. beam, sells for $995 without canvas top. 60-hp electric-starting Mercury easily pulls several skiers; it is priced at $850.

Feather Craft, Inc., 450 Bishop St., N. W., Atlanta 13



KAYOT has a deck length of 16 ft., is 22 ft. over-all with an 8-ft. beam; load of 2,125 lbs. can be supported on twin steel pontoons. As shown, it sells for $751.50. The 10-hp Scott-Atwater goes for $324.50.

Kaye Yacht Pontoon Co., Mankato, Minn.



GULL DELUXE is a mahogany lapstrake runabout 16 ft. long with a 74-in. beam. It's made to sell for $990. The motor is the style leader of Evinrude's three 35-hp models, the Lark, which is priced at $625.

Commodore Boat Co., New Bern, N. C.

CADILLAC CAPRI, an aluminum hull weighing 450 lbs., sells for $1,298 with windshield, steering, cushioned seats, convertible top and hardware. The 17-footer has an 84-in. beam. An Evinrude Starflite sells for $840.

Cadillac Marine and Boat Co., Cadillac, Mich.

COMET is imported from Finland. The lapstrake hull is northern pine and the topsides are mahogany; it's 16 ft. long, has a 6-ft. beam, weighs 550 lbs.; cost, $895. A 40-hp electric-starting Mercury is $655.

North Star, 632 City Island Ave., City Island, N. Y.

ROYAL VACATIONER is 19 ft. in length, has an 87-in. beam. Cabin has full sitting headroom, bunks, space for a head; $1,595. Evinrude is the 35-hp Lark priced at $625.

Cruisers, Inc., 804 Pecor St., Oconto, Wis.

SEA HAWK has forward bunks for overnight cruises; 16 ft. with a 78-in. beam, it is $877.50, complete with cushions, top. 60-hp manual-starting Mercury is $730.

Carter Craft, Box 591, Panama City, Fla.

MORRO runabout kit is priced at $249.75; the hull is 16 ft. long, has a 72-in. beam, a 32-in. depth and weighs 330 lbs. Manual-starting 40-hp Mercury is priced at $535.

Boat Kits, 3404 Lyndale Ave., S., Minneapolis 8

LYMAN clinker-built runabout is 16½ ft. long with a 70-in. beam, has a self-draining well for one outboard; it's $680. Evinrude is the 50-hp Starflite, priced at $840.

Lyman Boat Works, 1615 First St., Sandusky, Ohio

MARLIN is a Fiberglas 16-footer with a 78-in. beam; it seats six, has a self-bailing outboard well; cost is $945. Mercury is a 60-hp electric-starting model; cost, $850.

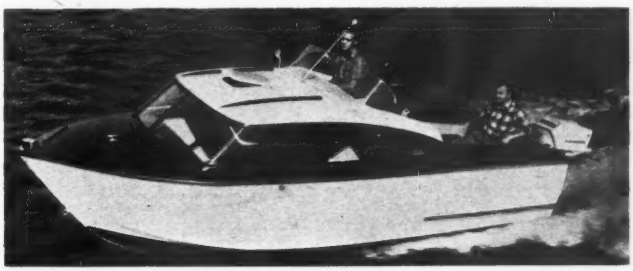
Wizard Boats, Box 246-Y, Costa Mesa, Calif.

DAY CRUISER is sold in different forms: finished, it's $998; unpainted, it's $798; as a kit, it's $596; a flying bridge windshield is $86 extra. The 60-hp Mercury is $850 with an electric starter and generator included.

Ladd Built Boats, 1514 E. Scotts Ave., Stockton 5, Calif.

SPORTS UTILITY has six-passenger cockpit with a walkthrough front seat; it is 16 ft., has a 6½-ft. beam; framing is mahogany and the planking is plywood; price, $993. A 35-hp electric-starting Evinrude is $495.

Cavalier Boats, Pompano Beach, Fla.



SARATOGA features one-piece Fiberglas cabin, sleeps two, is 18 ft.; kit price, $576. The 40-hp Scott-Atwater is $538.50.

Luger Industries, 3404 Lyndale Ave., S., Minneapolis 8

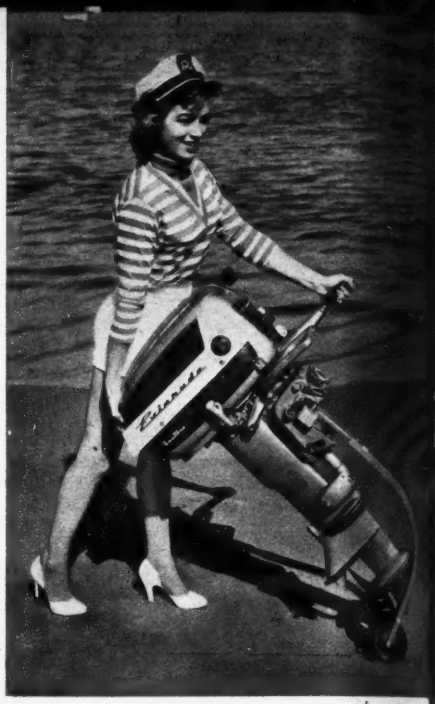
BAYCOMBER is Fiberglas; 19 ft. with an 85-in. beam, it has a large cockpit with molded-in seats and an exterior well for one or two outboards; it's $1,549 stripped. A 60-hp electric-starting Mercury is $850.

Crosby Aeromarine, Grabill, Ind.

AVALON is styled for speed; 15 ft. with a 69-in. beam, it's made of mahogany, has a baked-on epoxy resin finish. Price of a completely equipped hull is $819. Mercury is a 60-hp electric-starting model: $850.

Atlanta Boat Works, 665 Pylant St., N. W., Atlanta 6, Ga.

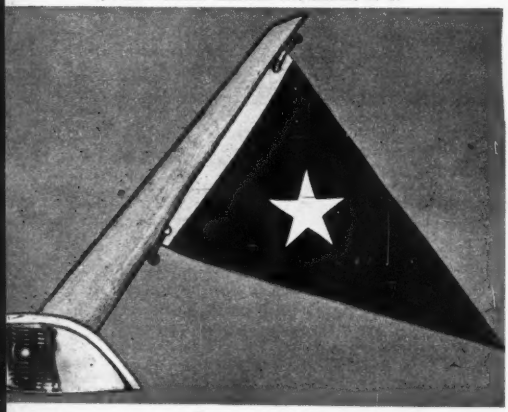
NEW for the BOATMAN



ROLL-IT fits motors up to 25 hp, locks under motor mount clamps and skeg. It's $9.95.
Marin-E-Products, 3030 Bridgeway, Sausalito, Calif.

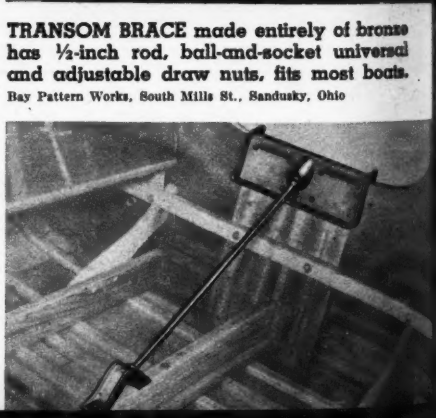
ALL-WEATHER letters and numbers (below, right) are Tenite plastic, come with beveled edges in various contrasting colors.
Bernard Engraving Co., N. 12th and Sherman, Toledo 10

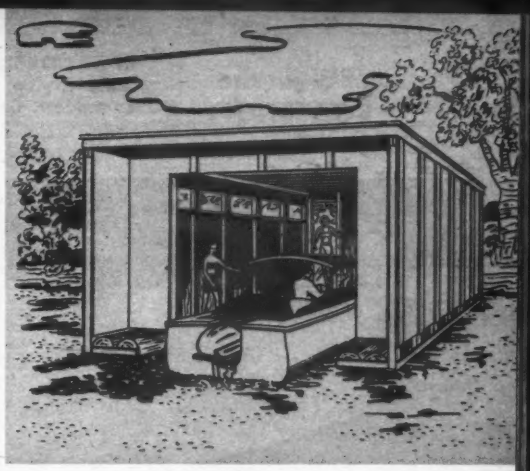
STREAMLINED pennant mast is mahogany, sells for $3.95, fits into socket in the combination bow light which is priced at $7.95.
Aluminum Marine Hardware Co., Auburn, N. Y.



SNAG-PROOF ANCHOR is best we've found: blades flip either way, dig in and hold: ring slides down shank for reverse pull.
Benson's Anchors, Inc., 316 S. Orchard Rd., Syracuse 4, N. Y.

TRANSOM BRACE made entirely of bronze has ½-inch rod, ball-and-socket universal and adjustable draw nuts, fits most boats.
Bay Pattern Works, South Mills St., Sandusky, Ohio





Douglas Fir Plywood Association, Tacoma 2, Wash.

PLANS for ski ramp and boat house are sold by Douglas Fir Plywood Association at cost of ten cents each. House is 8x24 ft., can be floated on logs, drums or plywood pontoons.

ELECTRIC BILGE PUMP fits through 4-in. hole. Capacity: 85 gpm at 20-ft. head of water; motor rating: 2½ hp at 10,800 rpm.

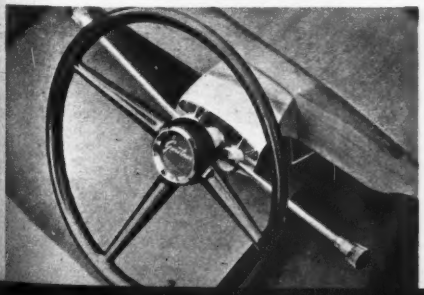
Lear-Romec, Elyria, Ohio

ACCESSORIES include boat hook, anchor, outboard gas tank holder and battery box. Vinyl coating adds life, reduces marring.

Whitman and Robinson, Weedsport, N. Y.

CONTROL SYSTEM for outboards mounts on dashboard, includes steering wheel, throttle and shift levers, is easily installed.

Gerstner Mfg. Co., 5024 Beard Ave. S., Minneapolis



NEW for the BOATMAN

BOAT COVER comes in various sizes to fit different hulls. Nylon fabric, it won't shrink, stretch, rot or mildew. Cost is slightly more than cotton duck.

Campbell Mfg. Co., Inc., 1345 Plowman Ave., Dallas 3, Tex.

TRAILER is from broad line of Pacemaker models; it takes boats up to 12 ft. long, has a maximum load capacity of 400 pounds.

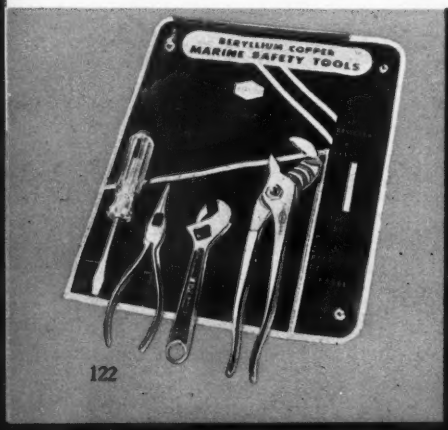
Pacemaker Boat Trailer Co., 2017 S. 63rd St., Phila. 42, Pa.

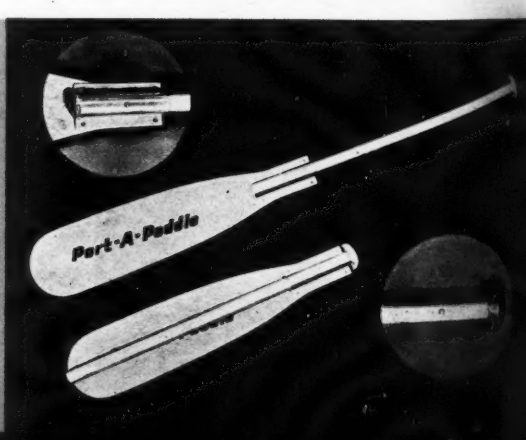
TOOLS designed for use aboard a boat are made of beryllium copper, won't rust, are spark-resistant, non-magnetic; price, $33.

The Beryllium Corp., Reading, Pa.

PORT-A-PADDLE collapses from 4¼ ft. to 29 in. for storage in boat; made of aluminum and marine plywood, it floats; $12.95.

Boat Names Co., 426 W. 5th St., Kansas City, Mo.



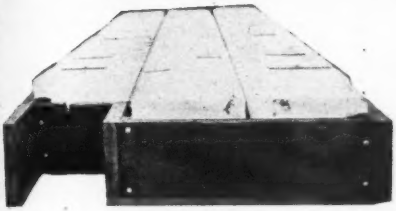


FUEL TANK for long-range cruising with an outboard comes in 12- or 18-gallon capacity; made of welded, lead-coated steel.

Tempo Products Co., 6515 Carnegie Ave., Cleveland 3, Ohio

KIT for making convertible top includes frame, hardware and canopy coated with a durable synthetic rubber called Hypalon.

Aro Top Sales Co., West Newton 65, Mass.

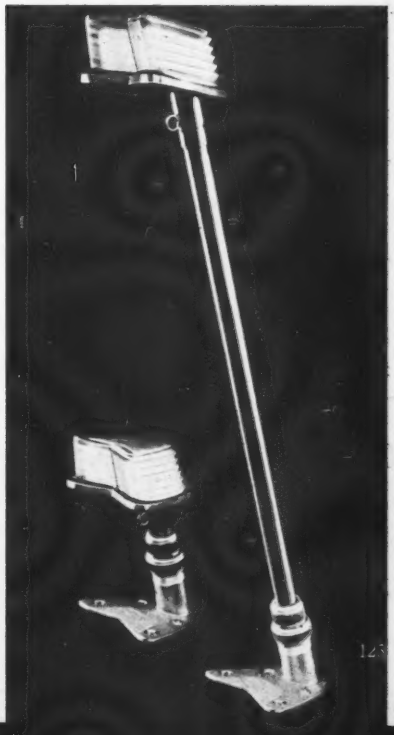


STYROFOAM PLANKS provide buoyancy for a float (shown upside down); they come in 9-ft. lengths of various thickness, width.

Styro Sales Co., 25-34 50th Ave., L.I.C., N. Y.

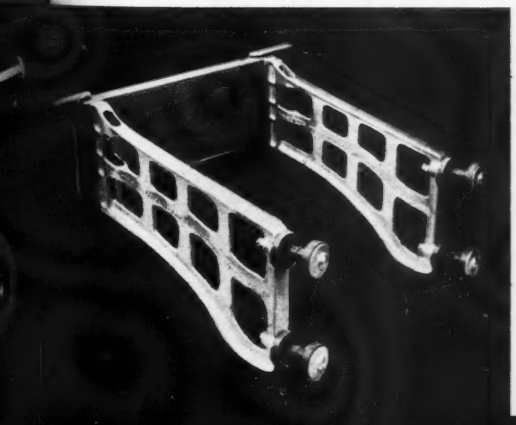
STERN LIGHT made of stainless steel can be raised to 42-in. height, telescopes to point 6 in. above deck when not used.

The Volfrath Co., Sheboygan, Wis.



OUTBOARD MOTOR MOUNT for installation on boat transom is made of aluminum alloy and hardwood for one, two motors.

Magic Tools, Inc., 881 Williams St., San Leandro, Calif.



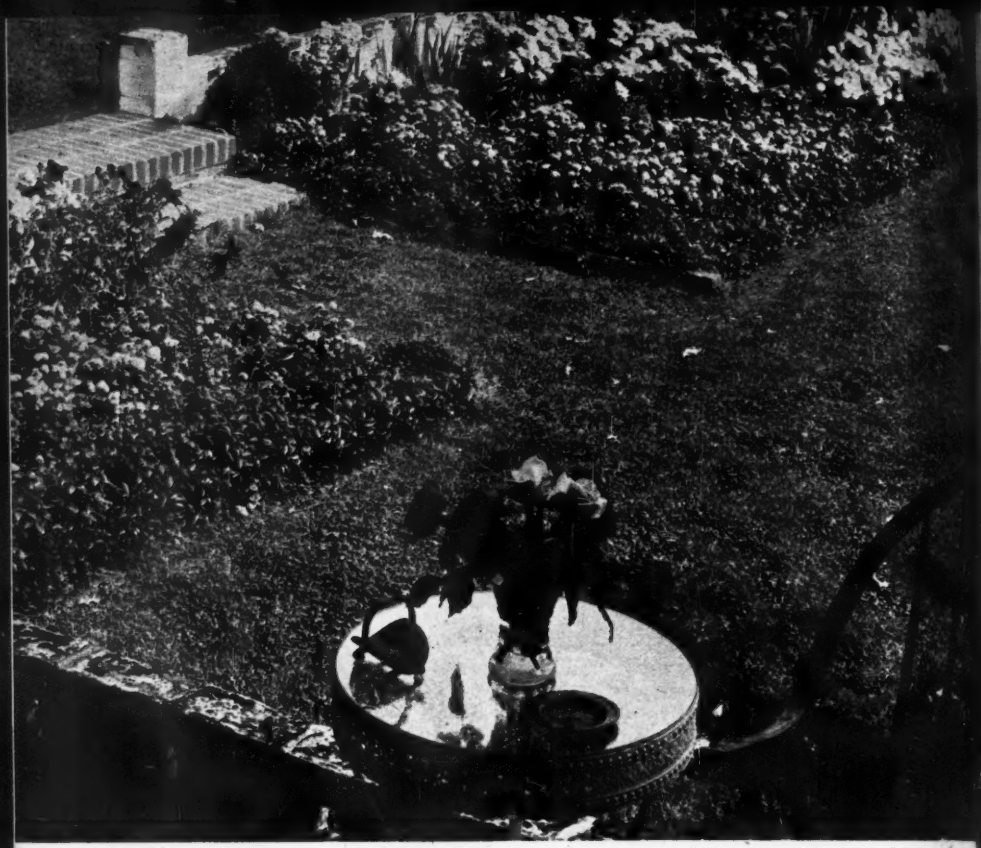


Photo courtesy Michigan Baccto Peat Co.

HOW TO MAKE YOUR GARDEN GROW

Green thumbs are worn by people who can follow instructions and exercise patience.

By John L. Springer

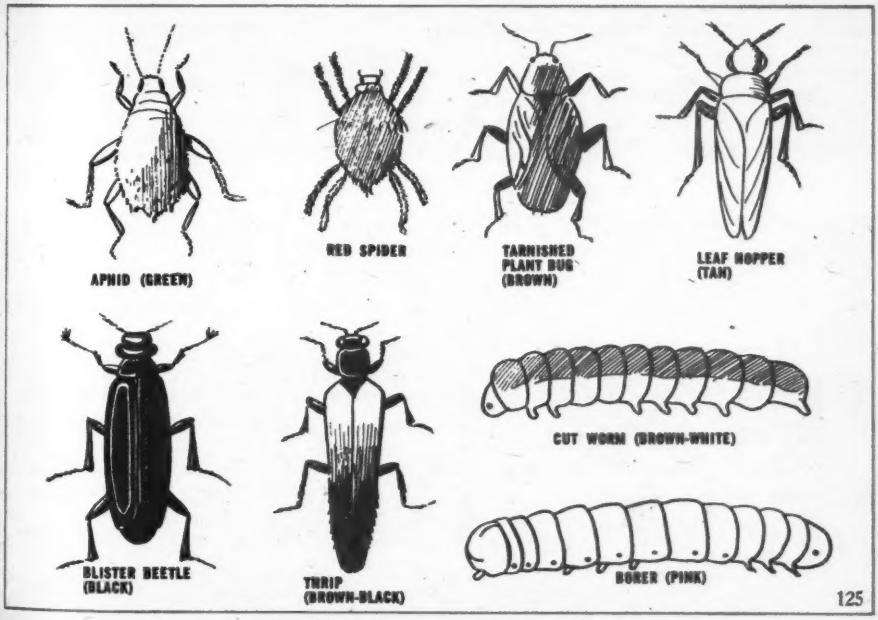
Many skilled handymen who have built homes with their own hands, from the foundation to the roof, shy away from the job of landscaping and gardening. They think that planting shrubs, flowers and growing a velvet smooth lawn calls for know-how that's far beyond them. They're wrong. Anybody with a little knowledge, patience and enough intelligence to follow instructions can produce beautifully landscaped grounds and gardens. Few improvement projects pay off so handsomely. Real estate experts agree that

a well landscaped house with a beautiful garden can up the price of a house as much as 20 per cent.

Good soil, of course, is the true foundation on which all gardens are built. This does not mean just one or two inches of good topsoil, for plants send down their roots as much as 18 inches and more to seek nutrients for their growth. Let us say that you are planning a small garden to surround a terrace. Your first step would be to remove all the topsoil. Inasmuch as this can be a back-breaking job it is best to lay off squares, say four by four feet. Remove the topsoil from the first square and dump it to one side. Then dig down into the sub-soil. If it is sandy, rocky or filled with builders' debris, shovel it into a wheelbarrow and get rid of it in the "service" area of your yard. After you have gone down a

HOLLY-TONE is used only for acid-loving plants and trees: holly, yew, mountain laurel, azalea, 'mums, etc.

MULCH of Michigan peat is used to retard moisture evaporation and prevent weed growth around plants.



"Gardeners, meet your enemies."

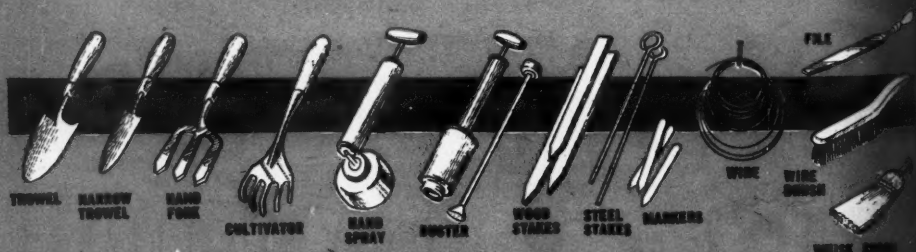
sufficient depth, at least 12 inches, you can stop and prepare the soil by mixing in compost, grass clippings, leaves, (even though not fully composted), and extra topsoil if available. This sub-soil will not be touched by the plant until its roots have gone down to it so you can be reasonably certain that at that time it will be naturally composted.

Proceed in a similar fashion until the balance of your garden has been worked over, doing a four-foot square at a time. The final step, of course, is to replace the topsoil. Roots need air as well as moisture. Unless your soil is completely waterlogged, this loosening and turning of the soil admits air, improves drainage and brings new portions of soil to the surface.

Before planting *any* shrub, give it the proper soil to grow in. The roots should have plenty of room to spread out and plenty of rich soil made up of humus, fertilizer and peat moss, from which they can draw nourishment.

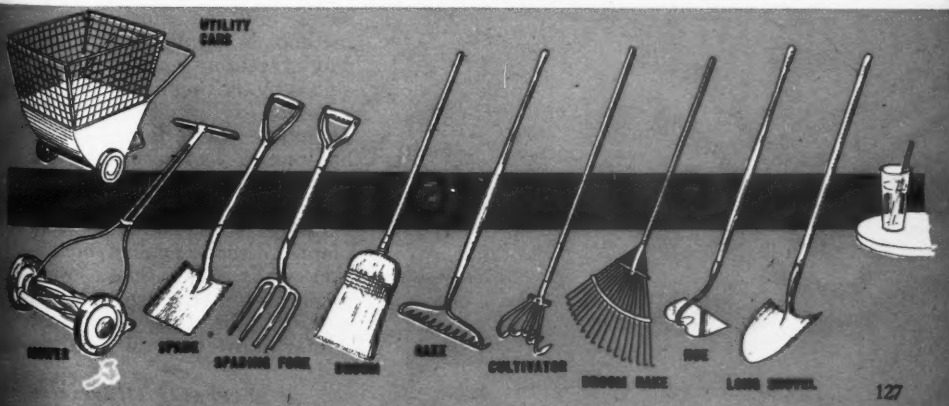
You can determine the exact condition of the soil that your shrubs will grow in. Dig down two feet and pick up the soil you find there. Rub it between your fingers. Clay has very fine particles and feels as though you have rubbed your hands over grease. Sand, on the other hand, consists of coarse, rock-like

WEED KILLERS and insecticides can now be applied by means of a garden hose.



HAND TOOLS for the well-equipped gardener are shown at top and bottom of these two pages.

ELECTRIC GRASS TRIMMER is a big help in caring for larger lawns such as the one at right. Use No. 16 or heavier extension.

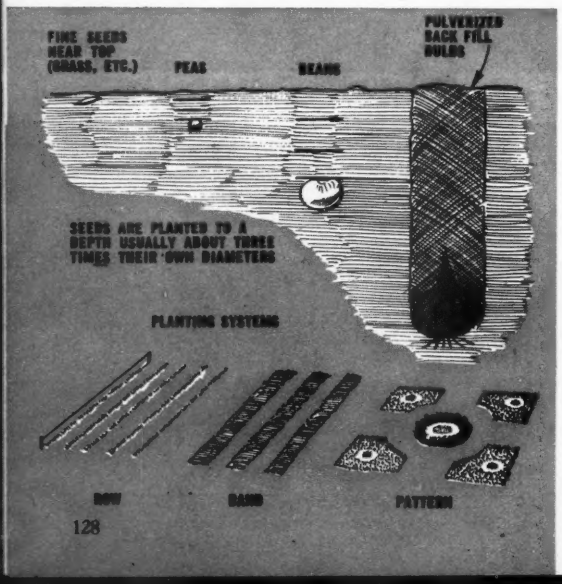


SECRET OF a good lawn is feeding three times a year in April, June and September.

SCOTT's electric lawn mower has ingenious system for supplying current to the mower.

particles and is dry to the touch. Between clay and sand there are categories of soils which the experts describe as clay loam, loam, sandy loam and loamy sand. If your soil is in the clay category, chances are it needs lime to make it more alkaline. This will also lighten its consistency and make it easier for plants to work their roots through the ground.

Every shrub has a different characteristic, but generally all plants fall into two categories: acid-loving or those that need an alkaline soil. If you are in doubt as to the acidity or alkalinity of your soil, write to the agricultural college in your state. They will tell you how you can send in soil samples for analysis.



The following plants are some of the better known and popular plants requiring a somewhat acid soil:

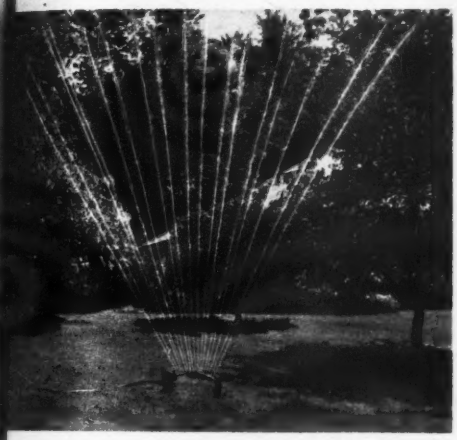
Amaryllis	**Hemlock**
Arbutus	**Holly**
Aster	**Iris**
Azalea	**Marigold**
Bittersweet	**Mountain-laurel**
Calla	**Phlox**
Chrysanthemum	**Rhododendron**
Gardenia	**Yew**

The easiest way of getting an alkaline soil is by means of liming. Lime neutralizes acidity. Most plants, but not all of them, do well in a soil that is neutral, slightly acid or alkaline. Some on the other hand, require a soil which is definitely acid (such as the ones listed above). The application of hydrated lime, ground limestone and wood ashes are the most popular methods of alkalizing. The best way of treating a soil to make it acid is by the application of peat moss or Holly-tone. The well equipped gardener generally has one or two sacks of these products in his garage or work shed.

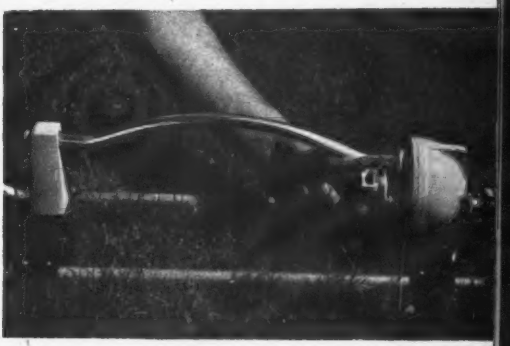
Flower beds should never be planted directly against foundation walls. They look lovely when the flowers are in bloom a few months of the year. In the winter, however, all that re-

STEEL PIPE is driven into ground (left) then the swiveling cord reel is inserted.

TECHNIQUE in using an electric mower is to mow away from reel to avoid cutting cord.



WATERING is next in importance to feeding. Melnor sprinkler covers a 40x60 ft. square.



SPRINKLER can be adjusted to cover left or right section, center, or all three lawn areas.

mains is a bare expanse of brick and dead stalks. Flowers are fine, especially in front of the house, but provide them with a good background. Evergreen shrubs which will cover the foundation the whole year 'round are fine.

Fertilizers. When the time comes to buy fertilizer the embryo gardener is apt to be confronted with a series of mysterious numbers such as 5-10-5, 10-20-40, and 4-8-4. These numbers are not a code to [*Continued on page* 144]

PARKER SWEEPER is ten times more efficient than a leaf rake for collecting leaves.

COVER STORY

BATTERY-FED TV operates on AC current converted from DC by inverter.

TV AT THE BEACH— OR ANYWHERE!

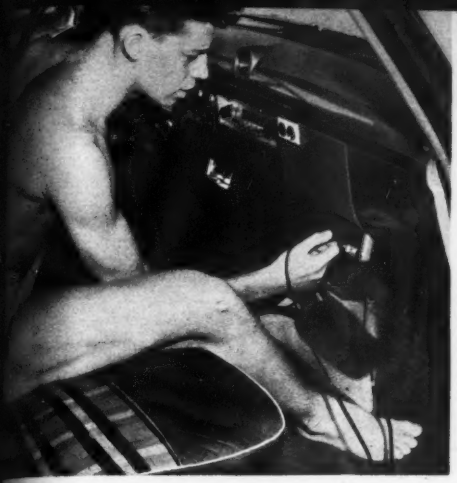
Now, with the aid of an inverter, power for your portable TV is as close as your dashboard lighter.

By Emanuel Berger

THE picnic and outing season is upon us once again. This time it will no longer be necessary to leave your favorite TV programs behind you while enjoying the great outdoors. Sandwiches and soda pop can be devoured to the accompaniment of your favorite TV program no matter where you're located.

It's all made possible by the appearance on the market of inverters which allow you to operate your TV set from the six or 12-volt system of your car.

The function of an inverter is to change the low-voltage direct current



REMOTE CONTROL UNIT can be mounted under dashboard to permit installation of the inverter in car's trunk compartment.

INVERTER can be connected within a few minutes. Front-seat location puts it in close proximity to the dashboard lighter outlet.

(DC) from your battery into high-voltage alternating current (AC) such as is available in your home. You can plug the inverter into the cigarette lighter receptacle on your dashboard or directly across the battery under the hood.

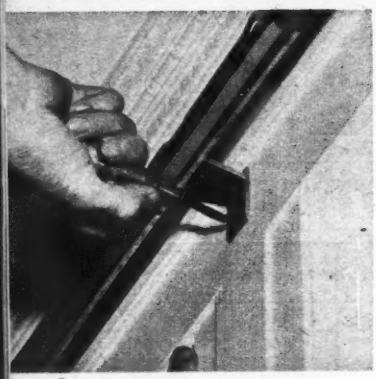
Two good brand name inverters available today are the models manufactured by American Television and Radio Co. and Radiart Corp. Prices vary according to the amount of power required, which will depend on the size of your set. The most desirable [*Continued on page* 146]

CAR TRUNK provides handy out-of-sight location for inverter; mounting brackets are available for permanent installation.

MFR.	MODEL	INPUT VOLTS D.C.	OUTPUT VOLTS A.C.	OUTPUT WATTS CONTINUOUS	OUTPUT WATTS INTERMITTENT	APPROXIMATE PRICE
ATR	6T-RHF	6	110	100	125	$57.00
	6T-HSH	6	110	125	150	$86.00
	12T-RME	12	110	90	125	$28.00
	12T-RHF	12	110	125	150	$57.00
	12T-RSE	12	110	100	125	$47.00
	12T-HSH	12	110	200	250	$86.00
RADIART	6SH15	6	110	150	175	$75.00
	6SW15	6	110	150	175	$87.00
	12 H15	12	110	150	175	$60.00
	12SH20	12	110	200	250	$78.00
	12SW20	12	110	200	250	$93.00

Build It...

NEED A CORNICE?



By R. J. Capotosto

A DRAW drape topped with a handsome cornice will add much to the decor of a room. Construction is not difficult, all you need are a few simple tools and wood. Here's how.

Lay out on heavy paper a rectangle the length of your traverse rod plus four inches, to obtain the over-all length of the cornice. Width will vary with length. As a general rule for effective balance, if length is six feet, make the width about eight inches. For a 12-foot cornice make the width 12 inches. With the length and width laid out, cut the rectangle and fold the paper in half, end for end. Choose one of the patterns shown (or design your own) and draw one half the pattern on the paper, working from the fold line, out. Cut the pattern with a scissors and trace the outline on ¼-inch plywood. With this done, you

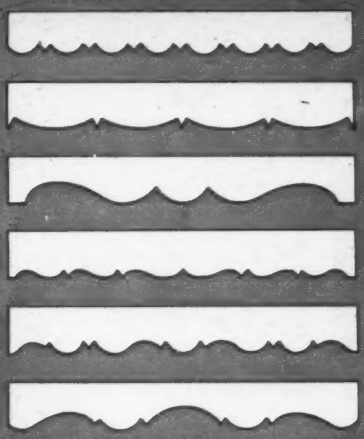
FIRST STEP is to attach the traverse mechanism to the window. Test it to make sure it works smoothly.

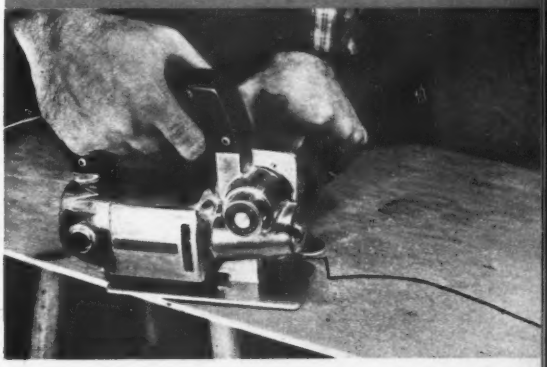
will have completed the most difficult part of the job, the rest is easy.

The cutting operation can be done by hand with a coping saw, but a powered saber saw will sail right through the wood. The top and end pieces are ¾-inch pine, six inches wide. (Depth of cornice will depend upon amount the traverse rod projects from the window.) Allow at least two inches of clearance between the rod and the face of the cornice for moving drapes. Assemble the pieces with glue and finishing nails. Set the nails, fill the holes, sand and apply the finish.

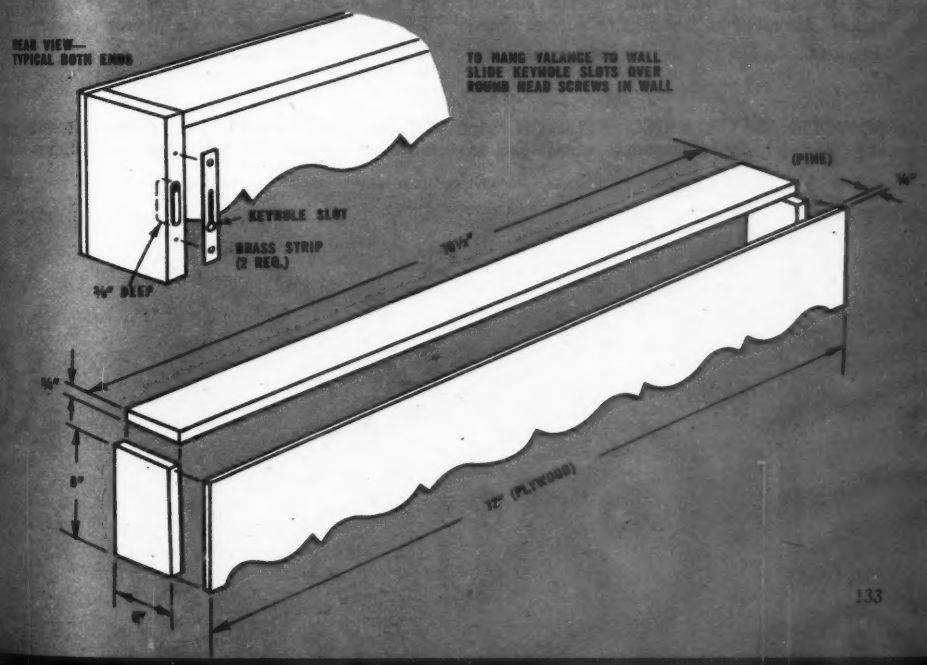
Although mounting can be done in several ways, the easiest method is to screw the cornice down from the top right into the window frame projection. If this is not practical, use angle brackets.

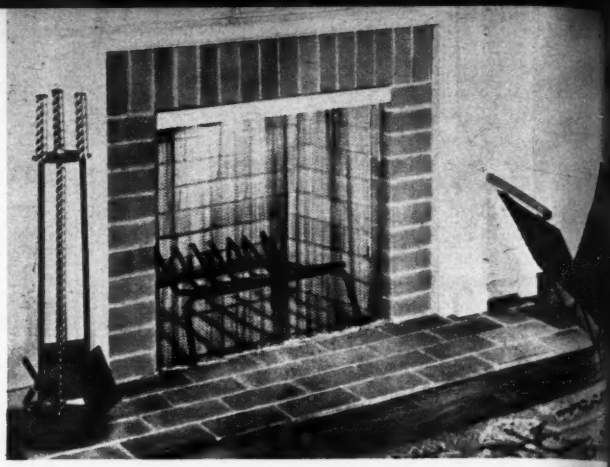
Aside from giving your drapes a smart [*Continued on page* 146]





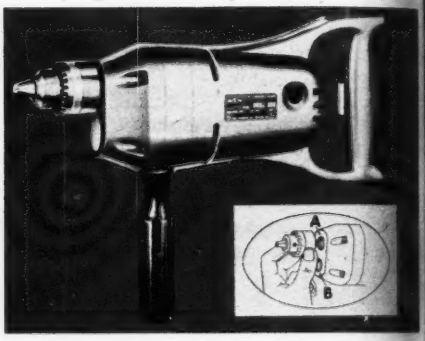
LAY OUT selected pattern (see above) then cut. A power saw eases the job.





SAND-O-GRIND wheel fits ¼-inch electric drills. Abrasive is bonded to rubber disk.

Western Abrasives, 2131 S. E. 6th St., Portland 14, Ore.

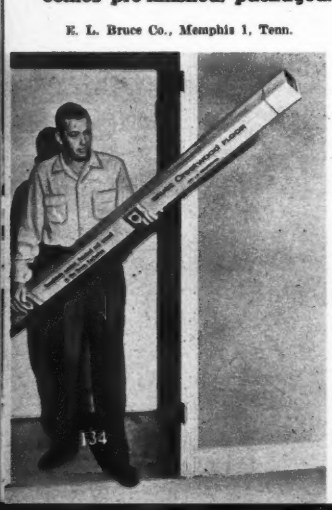


⅜-INCH DRILL runs at 1000 or 3000 rpm by shifting chuck between power take-offs.

Wen Products, Inc., 5804 N. W. Highway, Chicago 31

HARDWOOD FLOORING comes pre-finished, packaged.

E. L. Bruce Co., Memphis 1, Tenn.



SLIP-ON pipe fittings eliminate need to thread or weld.

Hollaender Mfg. Co., Cincinnati 23, Ohio

VACUUM CLEANER weighs 6¾ lbs., needs no attachments.

Red Devil Tools, Box 355, Union, N. J.

FIRESCREEN, left, is recessed in fireplace, can be locked in place without the use of tools.

Fred Meyer, 1499 Potrero Ave., San Francisco 10

PLASTIC POUCH fits bicycles of all sizes, gives protection in all kinds of weather; $2.98.

Sta-Dri Products, 147-47 Sixth Ave., Whitestone 57, L. I., N. Y.

HOUSE MARKER uses interchangeable letters in case owner moves to another home. Cast aluminum letters are coated, to reflect light.

Tenn. Fabricating Co., 1490 Grimes St., Memphis

UPHOLSTERY repair kit has nails, webbing and stretcher.

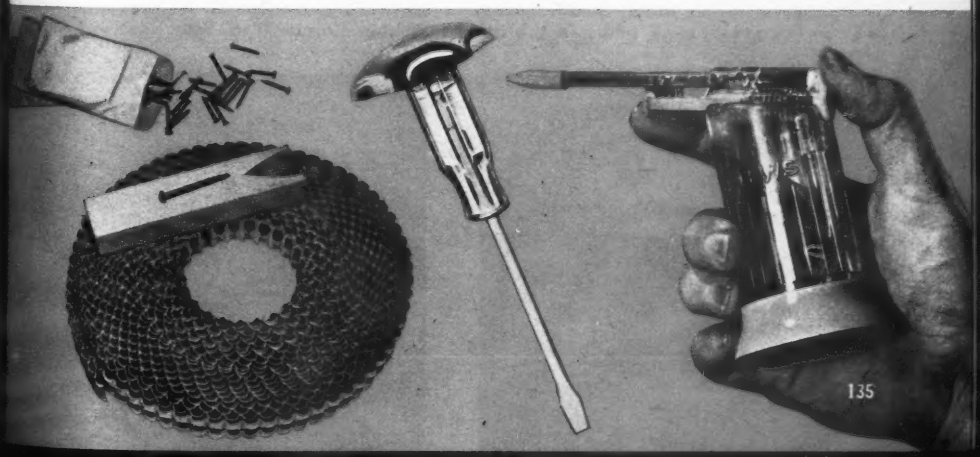
Riverag Co., 901 E. 135 St., N. Y. C. 54

SCREWDRIVERS of all sizes take palm-grip ratchet handle.

Kipton Industries, Inc., Royersford, Pa.

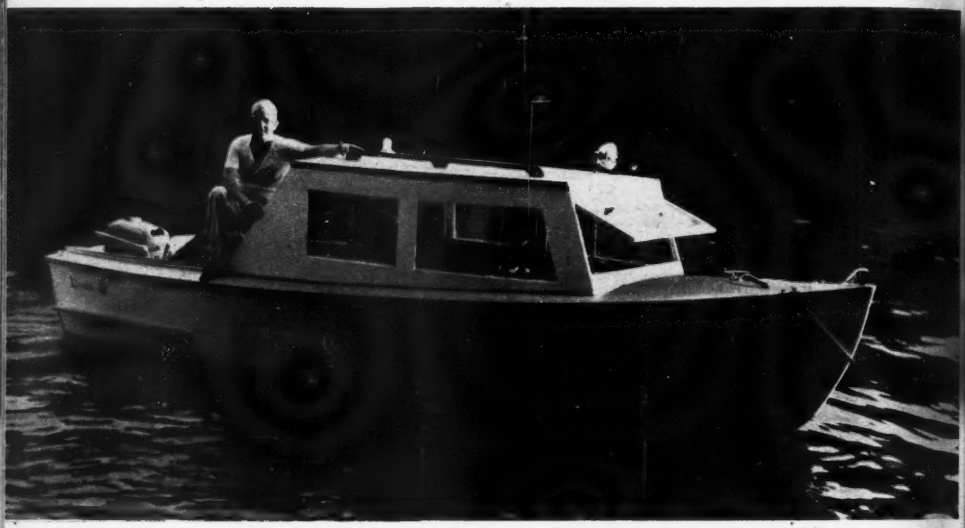
PLASTIC OILER has fingertip plunger, shoots a fine stream.

Plews Oiler, 701 S. 7th St., Minneapolis 15



Golden Hammer Award Winners

Each craftsman whose project is shown has received a 24-karat gold-plated Hammer and a Workbench Award Certificate. How about sending us a *black-and-white photo* and *full* description of your latest project? If you aren't a winner you may still receive as runner-up prize a 14-karat gold-plated Golden Hammer Tie Bar or MI's Certificate Of Merit. Photos of you and your workshop are also eligible. Send entries to MECHANIX ILLUSTRATED Golden Hammer Awards, 67 West 44th St., New York 36, N. Y. If you want entries returned, please enclose postage. Entries cannot be acknowledged.



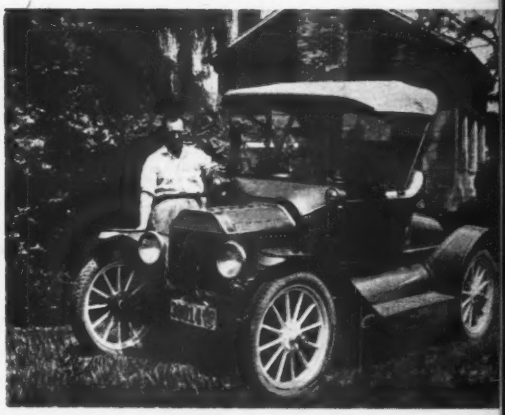
DAY CRUISER is an 18-footer with a six-foot beam that accommodates six people and can sleep two. Standing in his boat is the designer-builder, Roy Maul, of Parkersburg, W. Va.

BABY ACE monoplane was built from MI plans by D. L. Perkins of McAllen, Texas. Craft cruises at 93 mph, climbs easily, and has logged over 12 hours in the air.

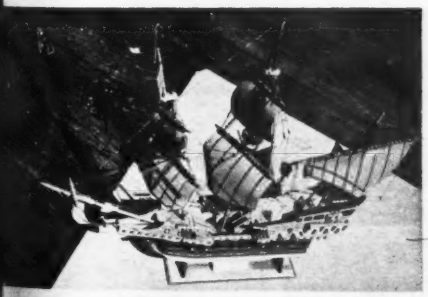
SPORTS CAR with a Fiberglas body built up over an Austin chassis and engine is the work of Halifax, N. S., harbor master, Captain Harold Tuzo. Total cost was $500.

The following craftsmen have been awarded GOLDEN HAMMER TIE BARS for their projects: William E. Kaser, Los Angeles, Cal.; Dan Dixon, Livonia, Mich.; Frank Perritti, Chincoteaque, Va.; Tim Teyler, Portland, Ore.; Daniel Wenderski, Osceola, Ind.; Charles W. Smith, Houston, Tex.; K. K. Nanni, Natal, So. Africa; Ken Wood, Sterling, Colo.; Harold C. Evert, W. Chazy, N. Y.; Jack M. Fesco, Los Angeles, Cal.; Jan Jackson, Spring Green, Wis.; Larry Morsen, Denver, Colo.; Larry Rothman, McKeesport, Pa.; Claude Owen, Ridgefield Park, N. J.; Joseph R. MacDonald, Stoneham, Mass.; James Marini, Brooklyn, N. Y.; Robert E. Noll, New Brunswick, N. J.; Joseph Fellin, Freeland, Pa.; Henry F. Corts, Brooklyn, N. Y.; Vincent Venza, Sr., Nutley, N. J.; [Continued on page 146]

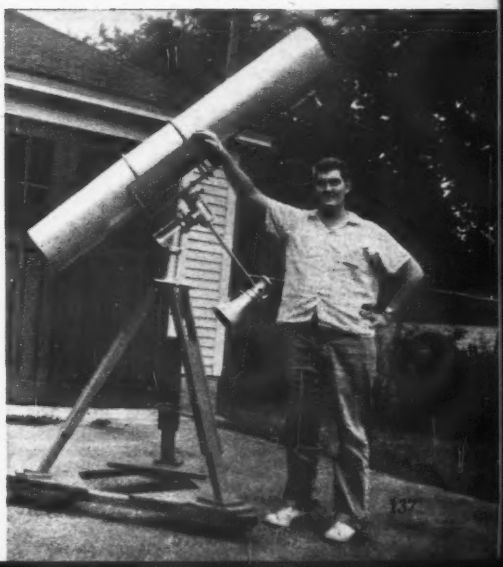
HANDMADE VIOLINS of professional quality represent the craftsmanship of Arvid Nelson Jamestown, N. Y. They are shown here being displayed by his son, Larry.



MODEL T FORD was rebuilt from a junked 1915 roadster. With the exception of the $135 reupholstering job, all the work was done by Arthur Ridgeway of Pendleton, Ind.



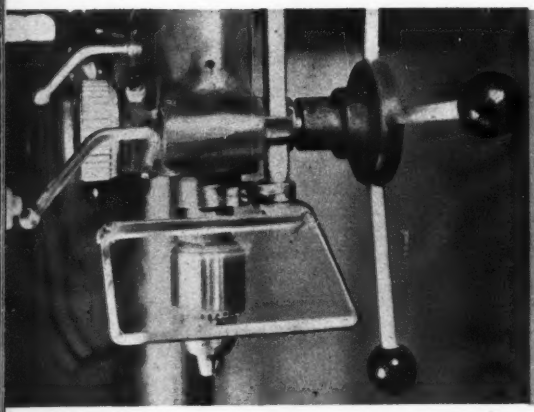
MODEL of Drake's famed ship, the Golden Hind, is 25 inches long, 21 inches high. Built by Keven Liersch of Victoria, Australia.

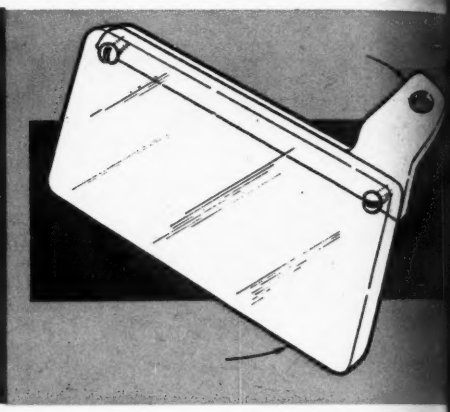


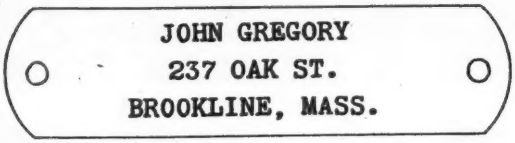
REFLECTOR TELESCOPE and equatorial mount were constructed by Ronald Trudeau, Manchester, N. H. Mirror is eight inches.

SHOP AND AUTO SHORTS

DRILL PRESS GUARD protects eyes by deflecting shavings and chips. Dimensions aren't critical—a piece of clear plastic about ¼"x4"x6" and a strip of ⅛-inch aluminum. Guard is mounted over bolt at lower end of drill press depth gauge.



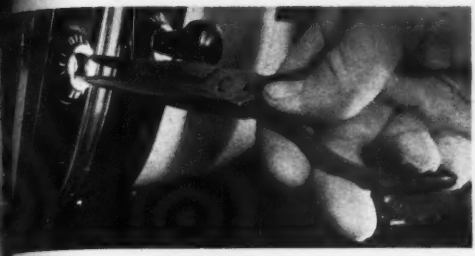




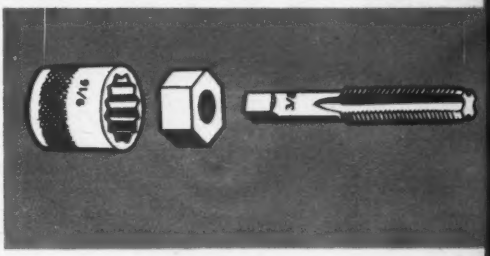
BRASS NAME PLATES have a variety of uses as identification tags around the workshop. Three 22-letter lines with your choice of wording cost about 40 cents per tag, or three tags for a dollar.

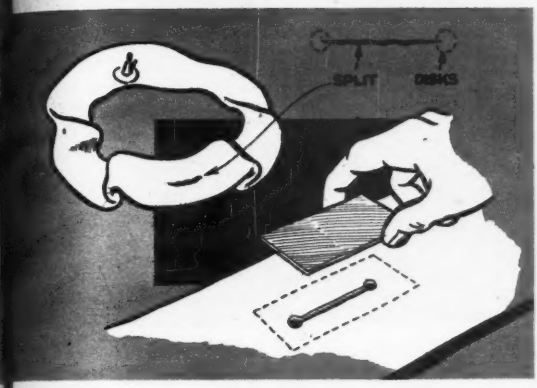
FREDDIE FUMBLES

NEEDLE NOSE PLIERS can substitute for a spanner wrench to loosen or tighten many of the dash-mounted fittings on your car.



TAPS can be made in hard-to-reach places by driving a nut on the end of the tap and turning with ratchet-handled socket wrench.





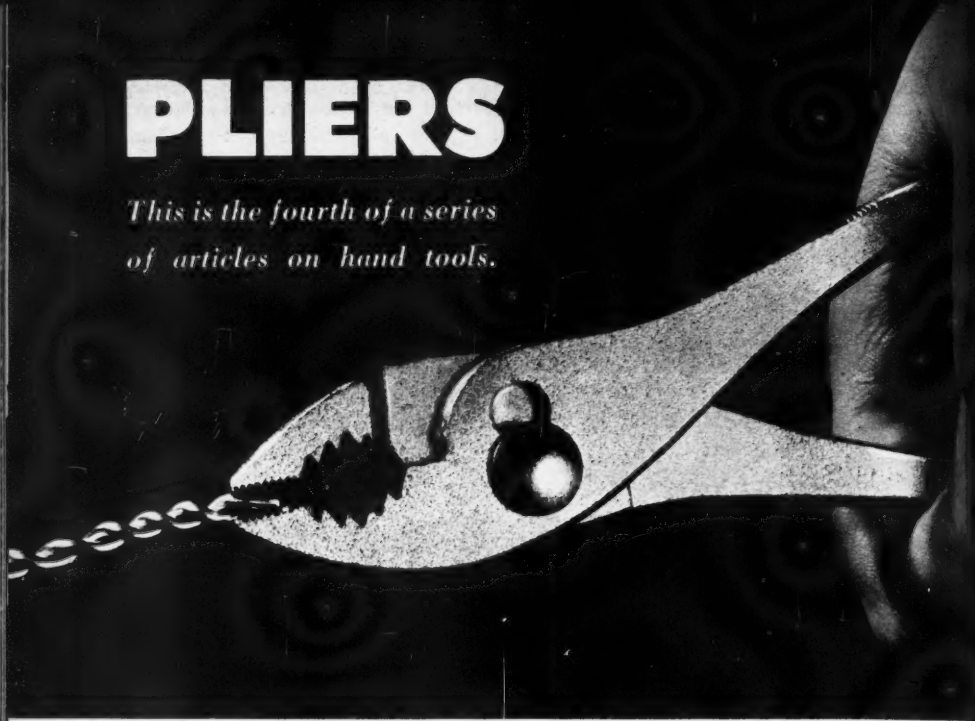
SPLITS in tire tubes will be kept from "creeping" by making ¼-inch disk cut-outs at each end of the tear and then patching over in the regular way.

HUB CAPS will be easier to snap on and off if a little grease is applied to the flanges; if they are too loose, bend their flanges outward slightly.

Send Freddie Fumbles your idea of a good short-cut, time-saver or safety device in your work, whether it be in the home, shop, office or farm. Each tip accepted will be paid for at the rate of $10. Naturally we cannot acknowledge or return the ones we cannot use. However all will be carefully read and evaluated. (Those which we can use in other departments of MI will be paid for at our regular rates.) Please send in your ideas on a post card only. Address to Freddie Fumbles, *Mechanix Illustrated*, 67 W. 44th St., New York 36, N. Y.

PLIERS

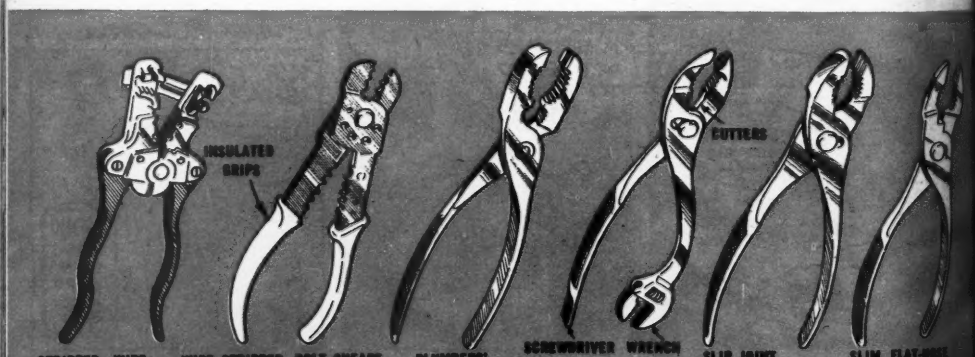
This is the fourth of a series of articles on hand tools.

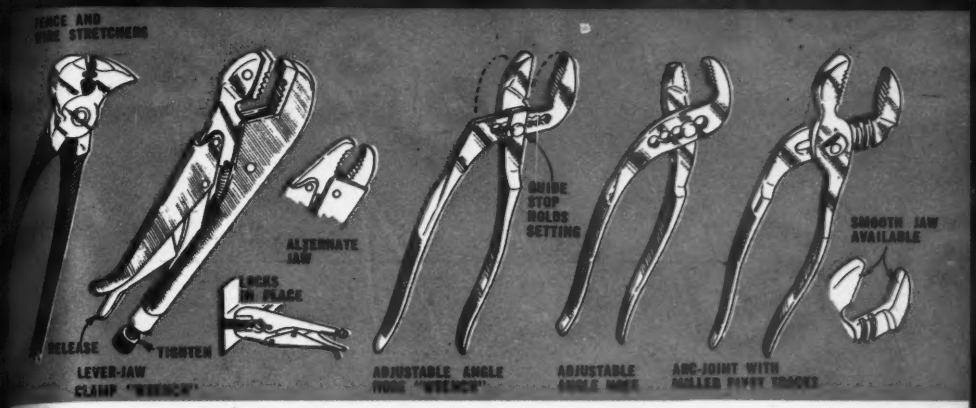


Yesteryear's barnstorming mechanics used to boast they could "fix anything" with a screwdriver and a pair of pliers—and they often did. True enough, the hip-pocket tool kit was sufficient in the days when the Model T and Model A could be overhauled right on the farm and when the major chore of a householder consisted of tuning up a bicycle or tightening the flippers of a simple toaster.

However, modern pliers, like all other hand tools, have been developed to keep pace with the requirements of the industries, skilled trades and homes of today. And it's amazing how the simple principle of the pincers—double hand levers, with a pivot fulcrum—has been adapted and modified to serve every need of contemporary technology, including such secondary functions as cutting, bending, stripping, shaping, etc.

All plier designs, with the exception





of those created for a single specific job, are outgrowths of these few basic classifications: combination slip-joint; round nose; long nose; nippers (side, end, diagonal); vise or locking type; and precision pliers.

These pliers come in a variety of shapes and sizes that include the lineman's pliers and electrician's wire-strippers; the brake spring, water pump, ignition and battery terminal types; radio-and electronic; upholsterer's; fur-stretching; coil-bending; spreading; lock-nut, and dozens of others.

The handyman-about-the-house will want a suitable pair of pliers for every job he's likely to tackle but he should avoid the expense of needless duplication and the resultant cluttering of his tool rack with rarely-used types.

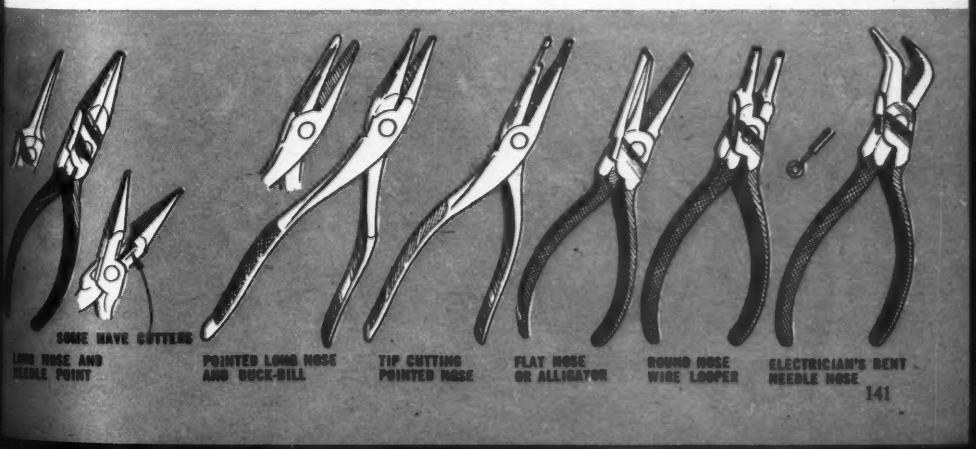
Bear in mind that a particular pair of pliers will probably be applicable to a host of different jobs. Just don't overdo it. It's not smart to use five-inch pliers on a large piece of work that would be better gripped by a ten-inch pair which provides more leverage with less strain or slippage. On the other hand, you certainly won't get a firm grip on small stock by using massive pliers that can hide or even damage the work at hand.

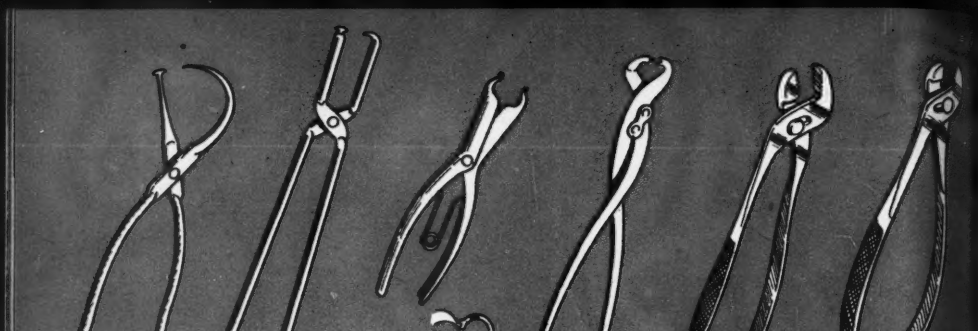
Here is a representative selection that should cover most of your everyday needs:

Six-inch combination slip-joint
Six-inch lineman's (side-cutting and splicing)
Five-inch diagonal cutting and wire-stripping
Six-inch long nose
Nine-inch multi-purpose pump
Ten-inch smoothjaw

Others can be added for your special hobby or interest. If you go in for hi-fi work or model building, get a set of five precision-type pliers in the 4½-inch length. These are also excellent for jewelry-making, watch repair and small appliance work. But whatever you buy, buy quality.

Low-grade pliers are easy to spot. This is what to look for:





(1) Jaws not parallel due to poor machining or a too-loose hinge pin.

(2) Rough or chipped jaw edges.

(3) In long nose pliers, improper jaw alignment, particularly at the tip.

(4) Poorly-shaped handle, awkward to grip. Good pliers feel comfortable in the hand and have a balanced heft.

(5) Rough, pitted or dull finish.

Quality pliers are drop-forged from high-grade steel, are accurately drilled and machined to a close tolerance at the joint bolt and are beautifully finished. These are the characteristics that spell maximum efficiency and long wear.

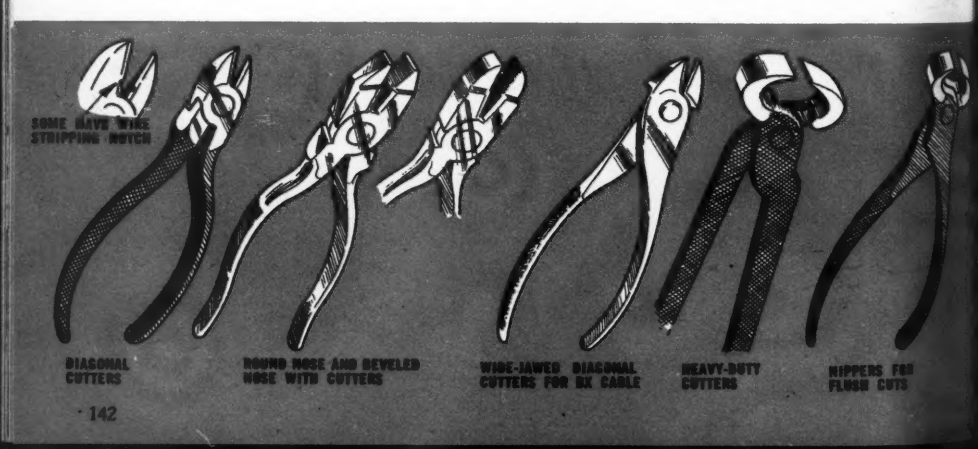
Storing Pliers: Pliers are less amenable to orderly workshop racking than are most other tools. A shallow drawer with narrowly spaced divider strips can be used with the pliers arranged in separate compartments. Or a length of 1x2-inch stock can be nailed lengthwise above the bench and notched at intervals to accept the plier handles. The notches should be so cut that the pliers are held in the closed position. A series of half-inch holes can be substituted for notches if this is more suitable.

A third method is to tack leather or plastic strips to the tool rack and fit the plier handles into these. Also, V-shaped pockets of similar material will receive the *heads* of pliers, thus letting you grasp the tools handles first.

Care of Pliers: Take note of these Thou Shalt Nots: Don't use the plier handle as a pinch bar or the jaws as a hammer. Needle nose pliers won't substitute for slip-joint pliers without permanent twisting of the jaws. Side-cutting diagonal pliers will do many jobs but they won't last long chopping off nailheads.

Keep the jaw serrations clean if you want them to give you a firm grip. When these teeth become clogged, clean them with a stiff wire brush. If the teeth become rounded off, renew them with a three-cornered file.

Cutting [*Continued on page* 148]



"Less Than Cost Of Car"

[*Continued from page* 111]

mium will include $1000 worth of property liability coverage. This won't offer much protection if you sink a $40,000 yacht, so it might be well to increase the coverage of this part of your insurance package. You may already be carrying a separate Comprehensive Personal Liability policy and, since most of these policies also apply to the operation of a pleasure boat, it's a good idea to discuss it with your agent. Some CPL policies limit horsepower, boat length, or both. If you're planning to do your boating with one of the larger motors, check to see that you're covered. If not, a rider clause can be added to most CPL policies for a modest sum. A $24,000 to $50,000 liability coverage for loss of life and bodily injury costs about $7 per year, slightly less on a three-year premium basis. This, too, is comforting to have.

Before we can go boating we've still got to put a trailer hitch on the car, rig trailer lights and license the trailer. Trailer licensing costs will vary from state to state from $2 to as much as $15. A $5 fee is fairly average. Light requirements will also vary from state to state but all states require a tail light, stop light and white light to shine on the license plate. Some require turn indicators and additional lights. The trailers we've selected, within the price of the budget, are already equipped with minimum lighting and wired to the hitch. A trailer hitch will vary in price but I strongly recommend a frame-type rather than a bumper hitch—and some states do not approve the latter. A good-quality hitch, including the price of installation, will cost about $20.

Though only a few years ago it was difficult to borrow money to buy a boat, banks now encourage marine financing. Here is a typical example: Usually on a purchase of $300 to $600 you will be expected to pay 25 per cent down and finance the balance over a period up to 18 months. Typical of financing costs are those of one marine financing concern offering the following terms, which are the same whether your boat and motor purchases are made through a dealer or a private sale in the case of second-hand equipment. For equipment valued at $1200 they offer financing up to $800 of the total amount and require 12 monthly payments of $70.67 each. So your financing charges will cost you about $4 a month for the 12 months involved. Over a 24-month financing period for $800, payments are $37.34 a month and $26.23 a month if you elect to extend the financing period for three years. On a $2100 boat-motor-trailer combination, the same company would finance up to $1400 of the principal amount with a one-year financing program of $123.67 per month for two years or $45.89 per month for three years.

Now let's go boating. In filling the fuel tank, follow the manufacturer's recommended blend of oil and gasoline. Don't cut corners by using a cheap quality oil. Stick to the manufacturer's choice of oil or one of the special outboard motor oils sold by most of the larger refiners. Also, don't feel that if a little lubrication is good, a lot will be better. More than the required amount can be harmful although not to the extent of using less. Don't use leaded fuels or those containing TCP. They offer no advantage and can cause spark plug trouble. Use either a good grade of standard tank gasoline or, preferably, marine white which is stocked by most marinas.

How many miles can we expect to go on a six-gallon tank of gas? This question can never be answered for there are too many variables such as boat load and design and set-up of boat and motor. But with our sample 14-foot utility and the 16- to 20-hp motor, you may expect to operate from 2½ to 3½ hours to a six-gallon tank of fuel, depending upon whether you run the motor constantly at full throttle or operate through a range of idling, cruising and high speeds. The fuel cost should range between 75 cents and one dollar an hour.

On the 16-foot boat, you can expect your 35- to 40-hp motor to operate on a single six-gallon tank anywhere from an hour to about an hour and three-quarters at full throttle, depending upon the condition, set-up and design of the motor involved. This means it will cost you some-

[*Continued on page* 150]

[*Continued from page* 129]

USE A child's cart for garden gear. You'll wonder how you ever got along without one.

frighten off amateurs. They are merely a convenient means of expressing the nitrogen phosphate and potash content of commercially packed fertilizers. For example, the United States Department of Agriculture recommends that evergreen plants and leafy green vegetables be given a 10-6-4 fertilizer which combines 10 per cent nitrogen, 6 per cent phosphate and 4 per cent potash. For flowers they recommend the more or less standard 5-10-5 formula. For root vegetables, 5-10-4.

You can make your own fertilizer and you'll save money. It's not difficult, nature has been doing it for years. In fact, probably enough fertilizer is created around the average suburban or country property to provide all the food the shrubs and grass need. For example, every year leaves from the trees and non-evergreen shrubs fall and decay, returning to earth all the essential elements taken from it through the root structure of the plan. Of course, the chemical elements in these plants cannot be readily absorbed by plants or grasses. But when the leaves rot, the chemicals are released into the soil.

When you burn those leaves every fall, you really burn fertilizer. Wise gardeners rake the leaves into an out-of-the-way spot, cover them with a layer of soil, or manure, and then add lime to keep down objectionable odors. After a year or two they have fertilizer containing almost all the ingredients needed for proper plant growth.

Lawns. It's not hard to grow a good lawn. You should start with at least four inches and preferably six inches of good, rich topsoil. This is essential because grass roots must penetrate to that depth to reach foods and water they need to withstand midsummer drought. The soil should be light and airy and should contain humus, peat moss and natural or commercial fertilizer. You must prepare the soil properly for an attractive, velvety lawn. There's no other way.

Measure the exact area of your future front lawn. Say it's 50 feet wide and sets back 30 feet from the street. Multiply the 50 by 30. You have 1500 square feet to work with. Measure the area of your sides and back in the same way. Unless your soil is really horrible, you probably can achieve satisfactory results with a 6-10-4 preparation. Spade the soil and spread the fertilizer at a rate of about ten pounds for each 500 square feet.

The Scott Company which has probably done more to make people lawn conscious than any other seed company, recommends now that lawns be fed at least three times a year, April, June and September, instead of the heretofore Spring and Autumn feeding. This business of specialized feeding has gone so far that you now can buy a fertilizer, Bordens 38, which supplies only nitrogen to the soil. In terms of the usual numbered formula, this is designated as 38-0-0. Nitrogen is a compound which plants need for greenness. One advantage of this fertilizer is that one application will last all season. It slowly releases the nitrogen to the ground and, is especially recommended for lawns that start to turn brown because of a nitrogen deficiency in the soil.

It won't pay to buy cheap seed. Cheap grades germinate quickly—but often die after one season. Result: bare spots which must be continually reseeded. High grade seed mixtures flourish year after year.

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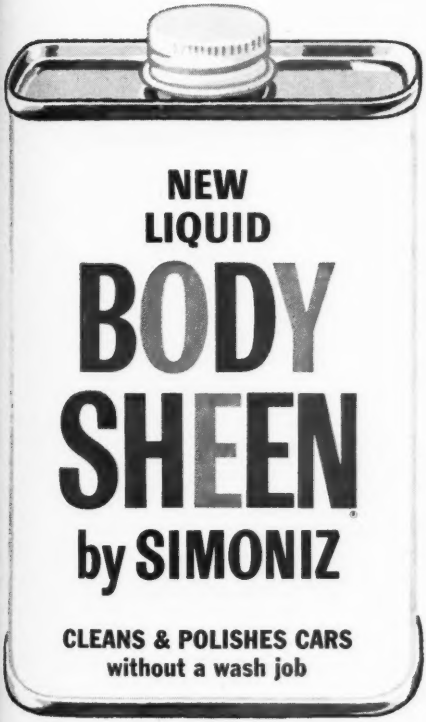

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Pvt. Max LeBlanc
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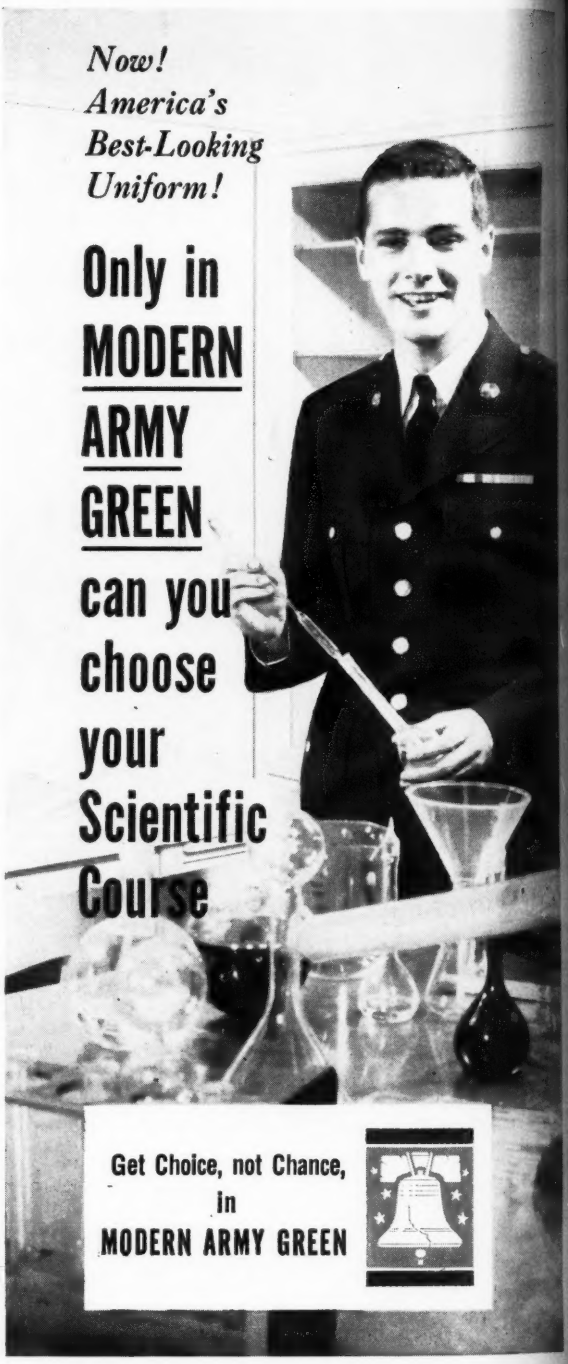

Get Choice, not Chance, in MODERN ARMY GREEN

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FRESH PAINT TIPS

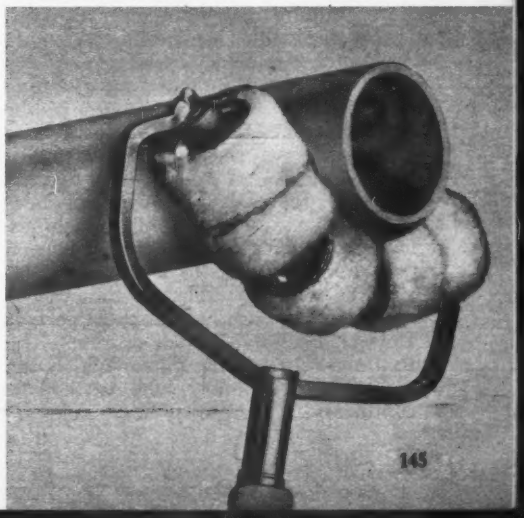
PLASTIC SQUEEZE BOTTLE containing turpentine is handy to have in the garage or work shop; couple of squirts cleans hands.

SMALL JARS with rubber-gasketed press-on lids are useful for storing small amounts of leftover paint for future touch-up jobs.

VALSPAR SPRAY VARNISH goes on smooth without the stroke marks or laps caused by a brush. It also eliminates brush cleaning.

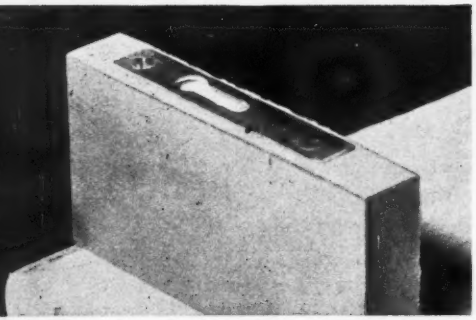
SPRING-MOUNTED roller will conform to pipes of different diameter with a slight change of pressure, is called E Z Paintr.

E Z Paintr Corporation, 4053 S. Iowa Avenue, Milwaukee 7



Need A Cornice?

[*Continued from page* 133]



ALTERNATE METHOD. Brass plate with keyhole opening engages a screw in the frame.

look, a cornice helps keep the dust off those important upper pleats.

You can obtain drapery, hardware and traverse rods from any department or hardware store. However, if you have difficulty in obtaining extra long lengths, or special sizes, try the Gould Mersereau Company, Inc., 35 West 44 Street, New York City. •

TV At The Beach

[*Continued from page* 131]

type of TV set for outdoor use is a portable such as those manufactured by RCA, Sylvania, etc.

It's important to point out that although the inverters we are talking about are suitable for running other appliances also, you must be careful not to exceed the power rating which is marked on the case. These units can be used for running dictating machines, tape or wire recorders, public address systems, amplifiers, radios, record players, electric shavers, small motor driven tools, etc. However, they are *not* suitable for operating heavy appliances such as refrigerators or washing machines.

The significance of the continuous and intermittent ratings is as follows: the intermittent rating indicates the power which may be withdrawn for short periods of time such as five or ten minutes. The continuous rating is the power which can be withdrawn for very long periods or continuously. •

Golden Hammer Awards

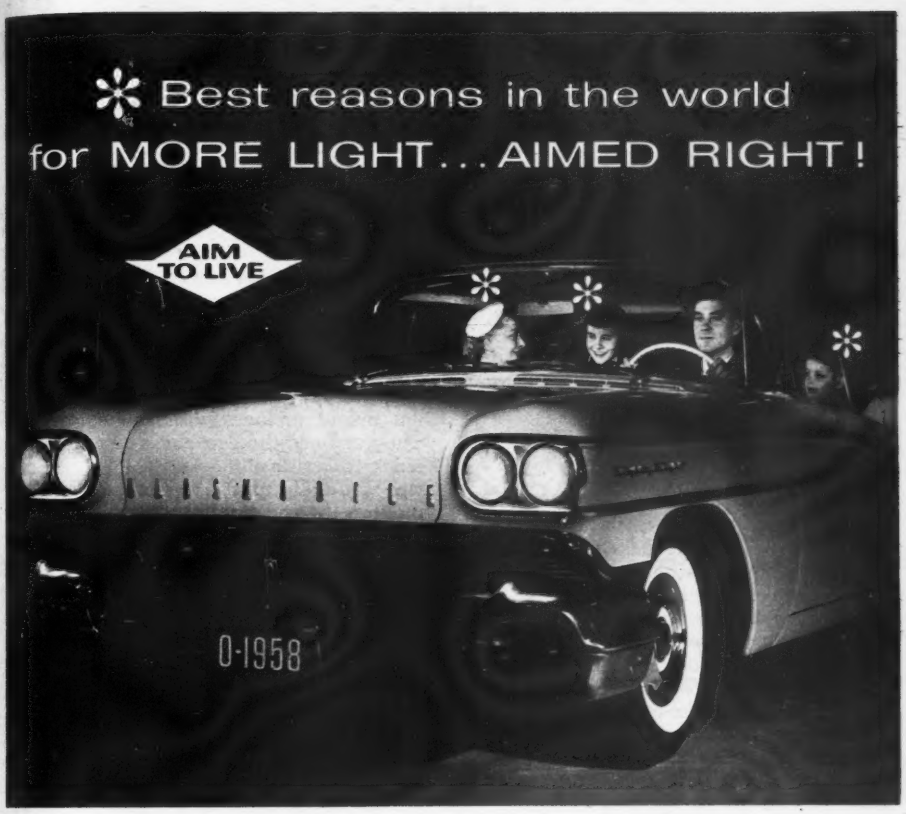
[*Continued from page* 137]

George E. Virgines, Northlake, Ill.; Vernis H. Jenkin, Gardo, Ala.; Charles T. Dotter, Portland, Ore.; Dick Hustace, Oakland, Cal.; R. J. Lobdell, Hinsdale, Ill.; Paul R. Strebel, Alameda, Calif.; Nels H. Manson, Vancouver, Wash.; James Orr, Woodhaven, N. Y.; David A. Staddon, Ontario, Can.; Dale D. Drake, Rock Island, Ill.; John Jewell, Des Plaines, Ill.; Arthur W. Carroll, Cheyenne Wells, Colo.; Verne K. Heckel, Jr., Butler, Pa.; Ralph Fries, Kalamazoo, Mich.; Kenneth L. Gentry, Chattanooga, Tenn.; Albert W. Bauer, North Haven, Conn.; Henry Cowen, Middle Village, N. Y.; Tim Davis, San Francisco, Calif.; J. E. White, Winchester, Va.; Earl E. Elliot, Hialeah, Fla.; Paul C. Sewell, Jr., Cave Spring, Ga.; Joe Jackson, Richmond, Va.; Phil R. Slocum, Coeur d'Alene, Idaho; C. R. Ahroon, Jr., Bloomington, Ill.; Robert B. Howe, Glassboro, N. J.; John N. Franke, Watertown, N. Y.; Carl H. Olsen, Erie, Pa.

The following craftsmen have been awarded CERTIFICATES OF MERIT for their projects:

Nathan Goldstein, W. Ronbury, Mass.; Harold C. Shover, Orleans, Vt.; B. A. Chambers, Johannesburg, S. Africa; Robert Kovacic, Sheboygan, Wis.; Earl Skelton, Sheboygan, Wis.; James Victor, Lyons, Ill.; Carl F. Holznagle, Wanamassa, N. J.; McLoin C. Berry, Evansville, Ind.; Robert Lee Pavesic, Kirksville, Mo.; E. F. Franke, Minneapolis, Minn.; Morris M. Anderle, Marinette, Wis.; Markey Rorinson, Belfast, Ireland; Hal M. Campbell, Olney, Ill.; Bill D. Slayton, Pacoima, Cal.; George G. Reber, Niles, Mich.; Herbert Kletter, New York, N. Y.; Richard T. Hansman, Louisville, Ky.; Melvin C. Mickerson, Bakersfield, Cal.; Alfred G. Tuttle, Midland, Ont., Can.; Thomas E. Brotz, Aurora, Colo.; Joseph Cutville, Malden, Mass.; Melvin L. Timmons, London Mills, Ill.; John Williams, Carleton Place, Ont., Can.; Louis Micciullo, Auburn, Maine; Libertad F. Llevares, Maasin, Leyte; Major Ned F. Britton, Memphis, Tenn.; Ronald Schwartz, Winnipeg, Man., Can.; Donald Smith, Iowa City, Iowa; Gerhard Lingen, St. Paul, Minn.; Roy William Walter, Detroit, Mich.; Francis A. Rudd, Salt Lake City, Utah; Gordon Cameron, Manitoba, Can.; Tom Kimbrell, Charlotte, N. C.; A. E. Bell, Owen, Wis.; Frederick Swietek, W. Hartford, Conn.; William B. Garrison, High Point, N. C.; Victor Dembowski, Grand Island, Neb.; Joe Fishback, Atlanta, Ga.; Edward Sauls, Gadsden, Ala.; Alfred Manzelli, E. Boston, Mass.; Jack K. Downs, Savannah, Ga.; Charles Finney, Martinsville, Ind.; Al Gomes, Oakland, Cal.; Guy Walton, Regina, Saskatchewan, Can.; John J. Steele, Cincinnati, Ohio; Olav Barstein, Fristiansund, N. Norway; Vern Fought, Dearborn, Mich.; Truman C. Steele, Christopher, Ill.; Clyde Heckman, E. Stroudsburg, Pa.; John B. Clark, Grosse Point, Mich.; Mrs. Lee Roy Van Voorhis, Caledonia, Ohio; Ralph Gibbs, Cincinnati, Ohio; Irwin M. Shafer, East Detroit, Mich.; Nicholas J. Kaut, New Hartford, N. Y.; Thomas R. Shipp, Shreveport, La.; Lester W. Pixler, Piedmont, Calif.; John Hagen, New Glasgow, Nova Scotia; Jerry Fisher, Gilroy, Calif.; William B. Eagan, Floyds Knobs, Ind.; Ray O. Couvillon, Baton Rouge, La.; Paul R. La Marca, New Orleans, La.; Gerard Robert, Montreal, P. Q., Can.; Wayne Allen Brown, State College, Miss.; William Tompkins, Detroit, Mich.; Leonard Conner, Hutchinson, Kan.

Watch for names of more winners next month.



"AIM TO LIVE" has an especially deep significance to the family man. He seeks every protection for himself and them. And one of the simplest for him to provide is the extra margin of night driving safety available through new Guide T-3 Headlamps.

These new Guides are the latest industry-approved sealed-beam type, with stepped-up power and the new light pattern which gives you more light on the right—where you need it most. They can be aimed without even turning them on because Guide precision-grinds three "Guide Points" on the face of each lens so that the aiming plane is accurate to within one ten-thousandth of an inch. Such precision, plus the simplicity and speed of aiming the T-3 way, means MORE LIGHT—AIMED RIGHT! That means extra safety for your family.

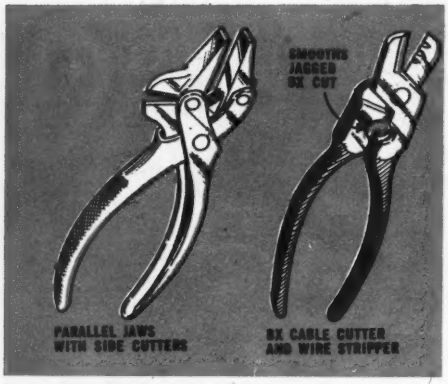
If your present headlamps are more than two years old have them replaced now with new Guide T-3s. And make it a practice to have your headlights aimed at least twice a year.

Guide
T-3
SAFETY-AIM HEADLAMPS
Buy in pairs where you see
AC

AC SPARK PLUG THE ELECTRONICS DIVISION OF GENERAL MOTORS

Watch Walt Disney Studios' ZORRO every week on ABC-TV

[*Continued from page* 142]

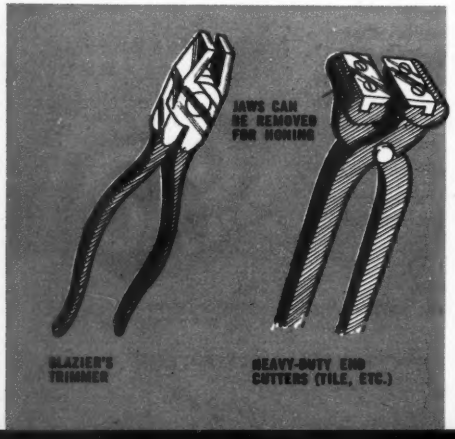


pliers that have been nicked or otherwise dulled can be sharpened by grinding. Separate the plier handles at the pivot bolt, then follow the original bevel and grind only enough to remove the nicks.

Oil the pivot pin occasionally for smooth, bind-free action. To prevent rust, coat pliers with a thin film of light oil.

Combination: Slip-joint pliers permit adjustment of the jaw width and provide parallel alignment of the jaws at maximum as well as all intermediate openings. Combination pliers are used for general utility purposes, such as holding pipe, stud bolts, any irregular surface, for bending flat bar in brass and other soft metals.

A smooth-edge type, without jaw serrations, functions like an adjustable wrench for almost any job, but the absence of rough jaw teeth makes it particularly valuable on soft metals and plated plumbing ware.



Round Nose Pliers are more delicately formed, with slender jaws tapered to a rounded tip. They are used for twisting and bending wire and thin metal strips. The pliers can form spring coils and make small-radius bends in wire. The pliers should not be used on hard metals or thick stock, nor should they be applied for bending flat sheets.

Long Nose Pliers are also called chain nose pliers, have long tapered jaws with flat inside surfaces which close together. They are common in electronic and radio work for assembling and soldering. Small tips are helpful for precision work, for picking up and holding small parts. Long jaws permit reaching into narrow or close areas. Needle-nose pliers offer a thin tip area for fine precision work and special purposes. All long nose types are available in curved or bent shapes.

Flat Nose Pliers have non-tapered jaws and great strength for bending wire and flat strips. Used in special assembling and factory work, they are useful also as substitutes for wrenches on small work. A variation of this is found in the duck-bill pliers with convex or concave shaped jaws, used generally by upholsterers and leather workers.

Diagonal Cutters and Nippers are in use in every type of shop. The diagonal jaws provide great cutting strength yet permit close precision work because of the good visibility of the cutting edge. These pliers are for cutting wire and narrow metal strips, pulling and clipping cotter pins on auto wheels and bearing caps.

Nippers have broad cutting edges with extreme leverage obtained by long handles. They are used to cut baling wire, nailheads, etc. One type of nippers, with jaws off center, is used by ceramic tile installers for chipping the hard ceramic tile to size. Chipping is done a small bit at a time; the jaw teeth are set about ⅛ inch from the tile edge, then pulled downward quickly to snap off a sliver of the tile at a time. With such nippers it is possible to shape the hard ceramic tile into any re-

[*Continued on page* 190]

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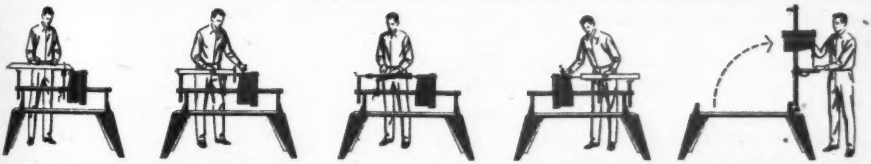

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"Less Than Cost Of Car"

[*Continued from page* 143]

where between $1.50 and $2.50 an hour to operate the larger boat at full throttle, less at intermediate ranges. This really isn't as rough as you may think for it has been estimated that the average boater puts less than 50 hours a year of actual running time on his boat.

Since you have a trailer, you will have no mooring or docking costs for the usual day on the water. If you and your family plan to use your boat during vacation, then you will run into another type of expense. Probably you will plan to trailer to some remote waterway. Towing a trailer will add about 10 per cent to your automobile fuel costs. On an average, it will add 50 per cent to bridge or toll road fees.

In general, if you plan to dock at any location more than overnight, you will find a dockage fee is charged. This charge may be on a per-foot (length of boat) basis and may vary from as little as two cents a foot to fifteen cents a foot per day. Some locations charge a flat fee for boats up to 30 feet. Many places make a standard practice of charging $1 a night regardless of the length of the boat. Just as berthing facilities vary in cost, so do the use of trailer launching ramps. Some marinas offer the use of their ramps at no charge. Others charge for launching and parking of trailer and car.

You may find, too, that certain launching ramps will be available to you only if your boat is identified with a Coast Guard registered number. You can register your boat by contacting the nearest Coast Guard facility.

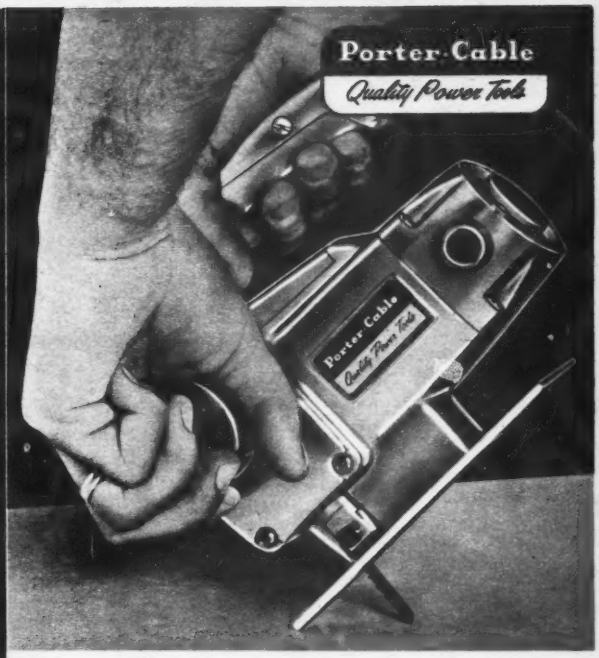
A careful operator may require no repairs to his motor at all during an entire season of boating. However, he may have to replace a damaged propeller which will cost about $15 to $18. He may also expect to have some minor type of ignition trouble. Faulty points, condensers or coils are the usual culprits. Replacement parts will seldom be in excess of $5. A like amount of labor should put the ignition back in proper tune for another season.

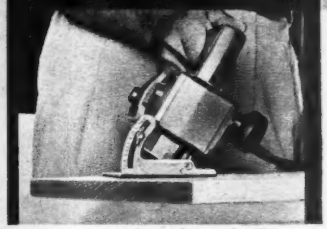
An annual tune-up of the entire motor is recommended. This is frequently referred to as a spring tune-up though I strongly suggest that the work be done in the fall so the motor is put in perfect condition before storage. Tune-ups can be handled in a number of different ways and this will largely depend upon the practice of your local dealer. Some dealers will do a complete tune-up for a flat fee usually between $10 and $15. Naturally any broken parts which require replacement will be extra. Perhaps a more desirable approach to the annual tune-up is to buy a combination tune-up and winter storage package. This is particularly true if you own an electric-starting motor since the dealer will also store the battery and check the charge periodically. Again the price of combined check and storage will vary, though usually it will cost about $20 to $25.

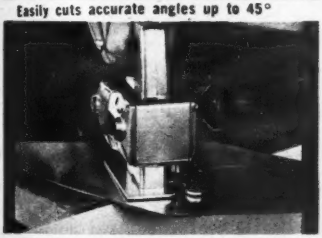
The cost of maintenance of your boat will depend upon a number of factors, foremost being the material of construction. Aluminum and Fiberglas boats require a minimum of repair—usually limited to a thorough scrubbing several times a season, with emphasis on the bottom. Both Fiberglas and metal boats collect water organisms, just as wood hulls do, and this mossy growth must be removed. Molded plywood, sheet ply or wood planked hulls with varnish finishes generally require some sanding. The deteriorated areas should be touched up or a complete coat of varnish applied to the entire hull. Few present-day boats require caulking since the bedding compounds, glues and sealers used may be expected to last the lifetime of the craft. Enamel-finished boats, like varnished boats, will need some attention.

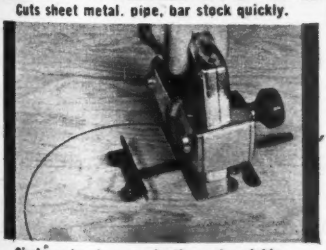
This whole list of costs and expenses may seem overwhelmingly long. However, let's look at it another way. Going out fishing on a charter boat will cost at least $10 per day per person (or $40 for the average family of four). And having spent $40 for one day's outing, what do you have to show for it? No boat, no motor, perhaps even no fish. The same money would give you quite a few days in your own outfit, plus the privacy, freedom and flexibility that you get only when you own your own boat. It's an investment that will pay you more in family pride, fun and entertainment than almost any other single investment we know. •

the one saw
that does almost
any cutting job
3 times faster!




Easily cuts accurate angles up to 45°


Cuts sheet metal, pipe, bar stock quickly.

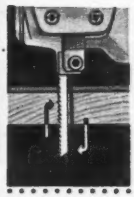

Circle cuts, too, perfectly and quickly.

Porter-Cable Electric Hand Saw with *ORBITAL ACTION!*

This versatile tool is actually seven saws in one... it's a rip saw, cross-cut saw, coping saw, keyhole saw, scroll saw, jig saw and hack saw! It makes inside cuts without drilling a starting hole —has a comfortable handle, and cuts 2" dressed lumber, ¼" aluminum and ⅛" steel. For hundreds of jobs—from rough-cutting to intricate scroll work, Porter Cable's Model 152 Saw has no equal!

Only $54.95

(Handy wall kit with accessories, $5 extra)



WORLD'S ONLY ORBITAL ACTION HAND SAW

Most efficient cutting cycle known! Blade moves ahead on cutting stroke – moves back and away on relief stroke. No dulling "drag"—blade runs cooler, lasts far longer, cuts faster.

IT CUTS lumber, plywood, steel, plastics, masonite, plexiglas, aluminum, asphalt tile, brass, bronze, copper, linoleum, rubber, lucite, leather.

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Please send me literature and complete information on your new electric Hand Saw.

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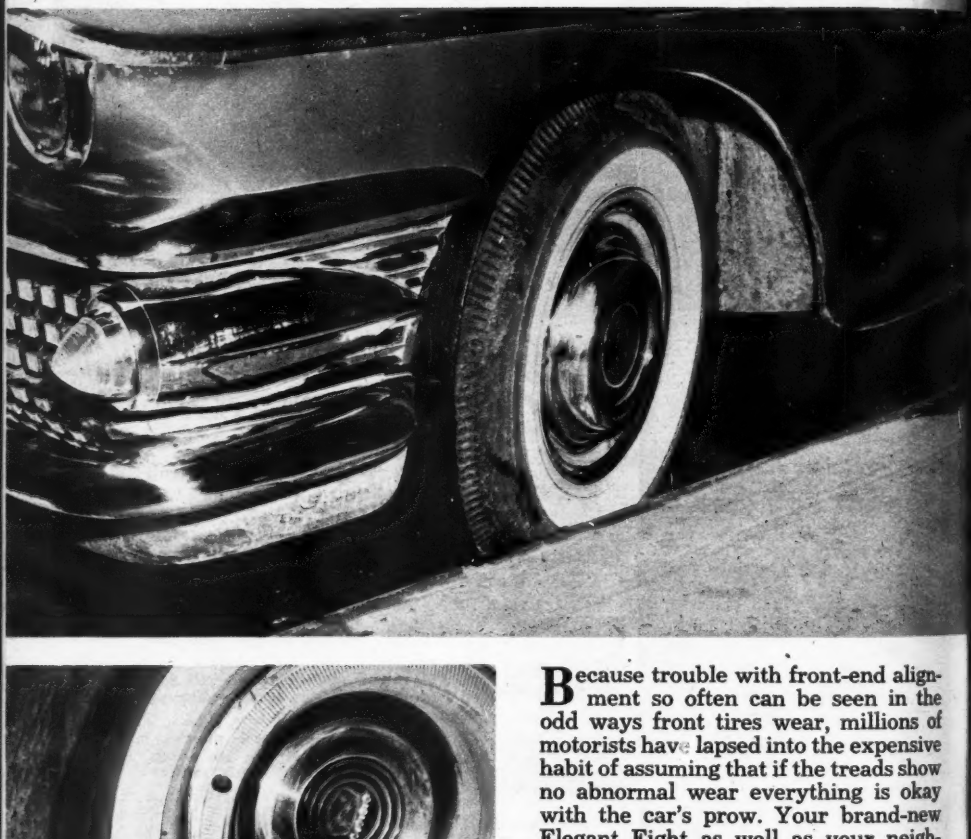
Canadian prices slightly higher.

CAR CARE

YOU GOT COCKEYED WHEELS?

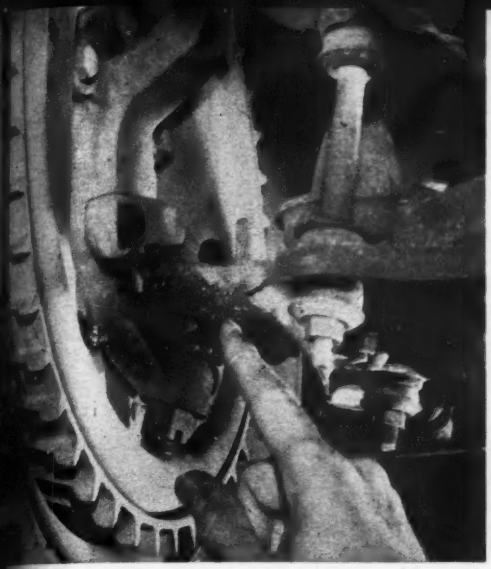
By Frederick C. Russell



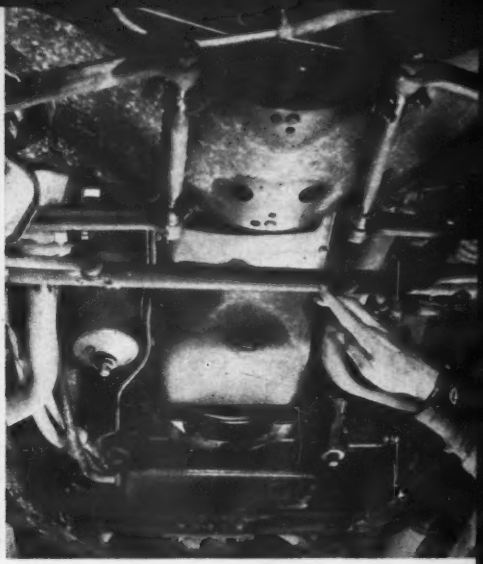
Because trouble with front-end alignment so often can be seen in the odd ways front tires wear, millions of motorists have lapsed into the expensive habit of assuming that if the treads show no abnormal wear everything is okay with the car's prow. Your brand-new Elegant Eight as well as your neighbor's Snappy Six prove that nothing could be further from the truth.

When Joe Worrier rushed to the repair shop to complain about feeling

OUT-OF-BALANCE wheel may cause shimmy, so add counterweights to rebalance.



TRUNION OR KINGPIN will tilt outward at the bottom on a properly aligned wheel.

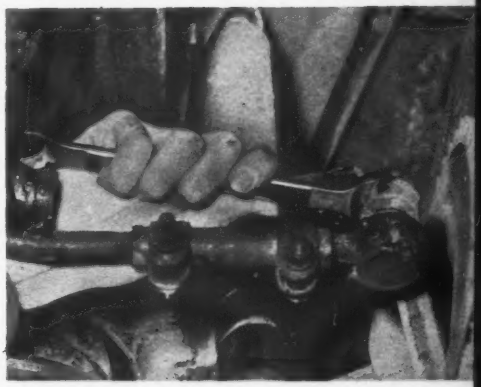


DRAG LINK should be inspected. If bent, it will throw the wheels out of alignment.

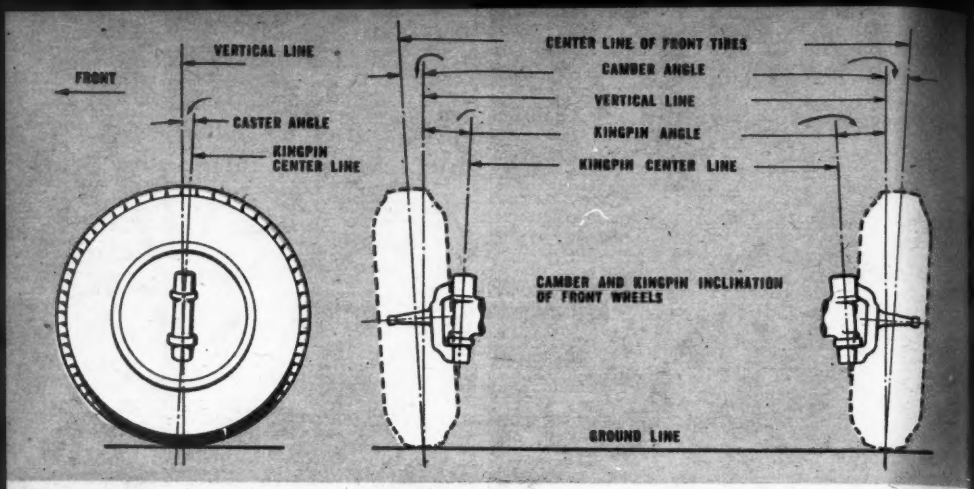
enough road shock to suggest a pair of broken shock absorbers, he even pictured a broken coil spring or a bent wheel spindle. But his mechanic calmly sat down to a cup of coffee and announced that after his morning "break" he would put the car on the alignment machine. "It looks to me like too much caster or negative camber," the wrench wizard explained. "Funny how so much car trouble boils down to misalignment."

He went on to tell about another customer whose car developed the bad habit of steering in an erratic way whenever the brakes were applied. It began to look a bit mysterious when a careful check of the brakes failed to show up anything wrong in the deceleration department. Again the wizard nodded in the direction of his alignment machine. "You're ahead of me if you have figured that your steering trouble is due to too little caster."

In these cases there was no hint whatever of tire wear. You would never have suspected there was anything wrong with alignment, yet it was the sole cause of the trouble. It reminded me of a friend whose car became increasingly harder to steer. "A loose steering gear case," said one mechanic. Disagreeing



LOOSE TIE ROD sockets (above) should be greased and then tightened down. Steering connections (below), if loose or binding, can also be a cause of misalignment.

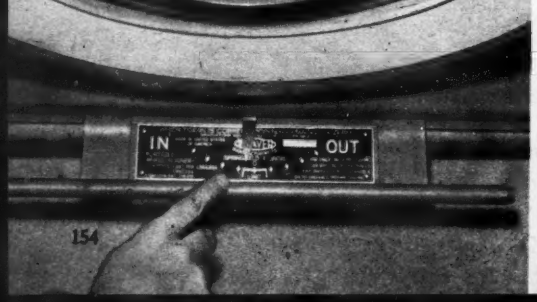


WHEEL ALIGNMENT indicator will give you a true picture of that out-of-true wheel.

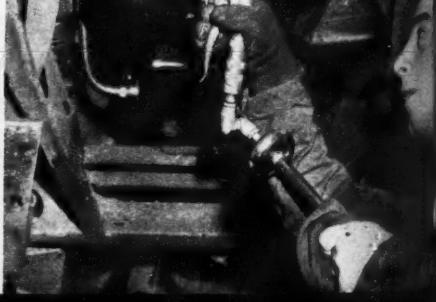
was a shop foreman who suggested too tight adjustment of ball joints. A third came out with the idea that the particular model car was known to develop steering column distortion. It seemed to be adding up to an expensive mess of repairs with no one being too sure of the outcome. But my friend was smart. He recalled that the car hadn't been treated to a wheel alignment in over a year. With only this much to bank on he decided to knock a hole in a ten dollar bill by having a front-end alignment expert look over the situation.

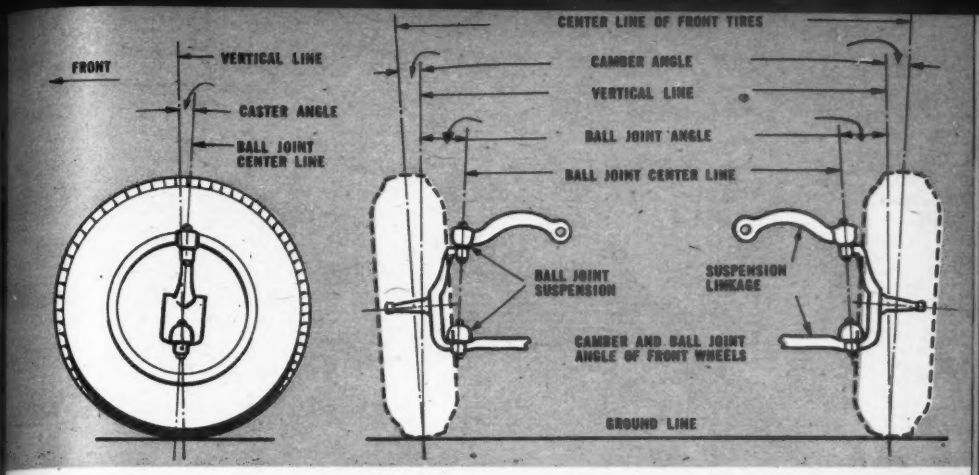
Correcting for too much caster and toe-out, the alignment man came up with a quick remedy for

PORTABLE wheel aligner ("weegee board") is used to measure the amount of toe-in.



LUBRICATION of all steering components is important, particularly the gear box.

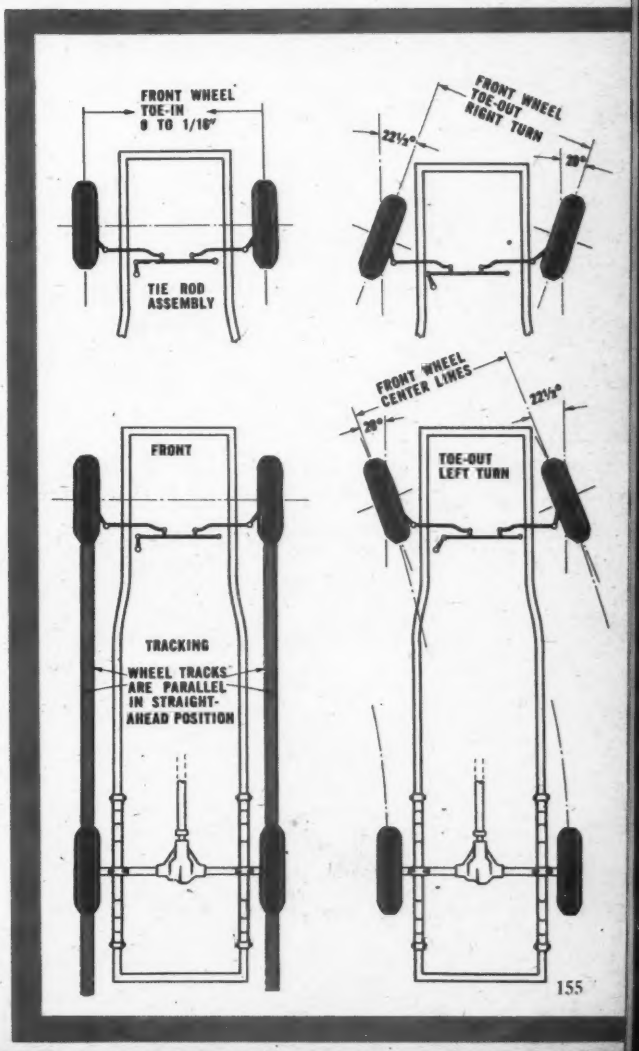




a seemingly serious steering situation. It was like giving someone who's ill a comfortable bed and a glass of water even if you don't know what's ailing him. The mere rest may bring him out of it. A car that darts and drives all over the road could have eccentric wheels or a bent kingpin, but an alignment job may show that the only fault is excessive toe-in.

Power steering tends to cover up steering faults, but don't let it fool you. Recently a wheel twirler noticed that his car started wandering and weaving. Naturally he jumped to the conclusion that something was amiss with the power steering system. Someone put him wise to the fact that there might be something wrong with the front end, so he made a date with an alignment man who seemed to be wasting time checking front tires for pressure. Finding these at the correct pressure he then surprised the owner by checking the *rear* tires too. And right there he proved himself to be a smart me-

[*Continued on page* 162]



Please put your name, address and picture-taking data on back of each print. Wrap with cardboard stiffeners and enclose a self-addressed stamped envelope or postage for return of unused photos. Prize-winning pictures are not returned. Judges are MI Editors. Duplicate prizes awarded in case of tie. Address entries to: *Mechanix Illustrated*, Photo Contest, 67 W. 44th St., N.Y.C. 36.

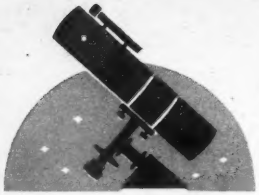
1st Prize ($25).....PORTRAIT Elmer F. Clark, San Bernardino, Calif., used an Ansco 4 x 5 view camera with an exposure of about 1/5 at f-22.

$10 Award.....“WHERE'S MA?”
A Rolleiflex set for 100 at f-11 was used by M. Silverstein of Los Angeles, Calif.

$10 Award.....ONE LAST TRY
For this, E. J. Eisenmeier, Baltimore, Md., set his Auto-Rolleiflex for 1/250 at f-22.

MONTHLY PHOTO CONTEST

$10 Award.....STEEL AND GOLD
Speed Graphic; 1/50 at f-16. Made by Larry Page, Idaho Falls, Ida.



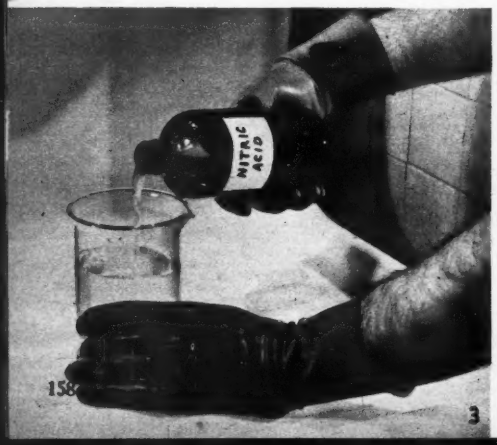
SILVERING

The Amateur Telescope Maker's Page

Last month we finished the mounting of our telescope. Now we are ready for the final and equally fascinating phase, the silvering. Actually, the mirror may be mounted and used as is, without silvering, for viewing the moon with excellent results. Because the moon is so very bright, the unsilvered glass will reflect enough light. However, for viewing the planets and stars, we must silver the surface.

There are many [*Continued on page* 163]

1. Various items you will need to silver your mirror. See text for complete list. 2. Wear rubber gloves and wash all glassware thoroughly with warm water and soap. 3. Add an equal amount of nitric acid to water. 4. Scrub surface of the mirror with this solution.

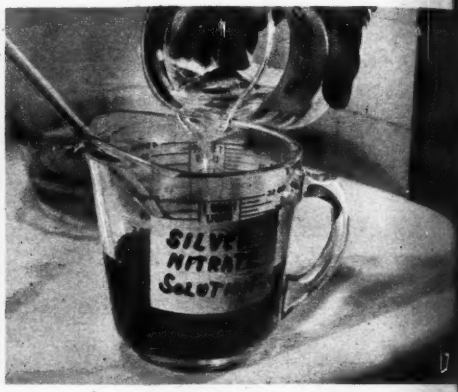


5. Rinse mirror with stannous chloride. 6. Rinse under tap. 7. Submerge in distilled water.

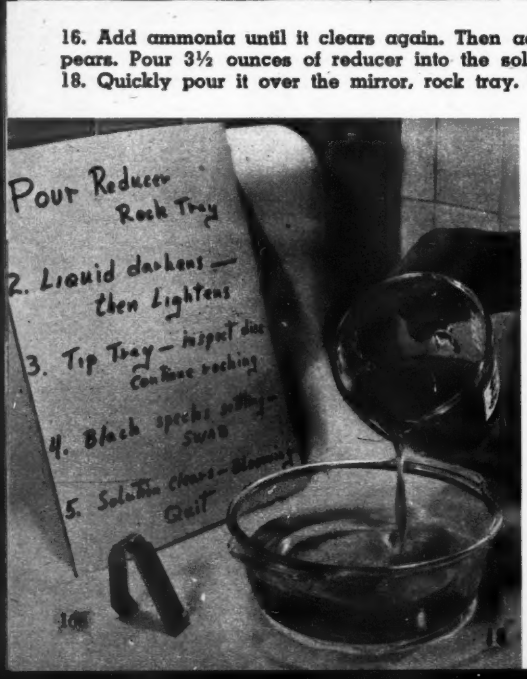
8. Reducing solution is mixed and aged by simmering ten minutes on range. 9. Pour off 3½ ounces, label, Reducer. 10. Mix silver nitrate solution. 11. Pour off part and label, Reserve Solution. 12. Mix caustic solution. 13. Add ammonia as shown to the silver solution.

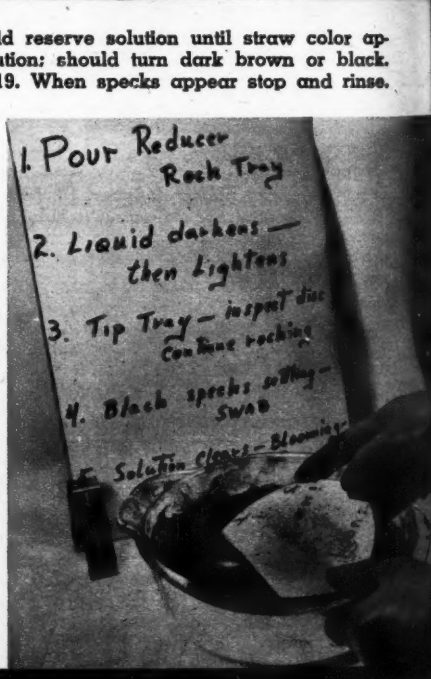
Turn page for more photos

14. Keep adding ammonia until solution clears. 15. Add caustic solution, keep stirring.



16. Add ammonia until it clears again. Then add reserve solution until straw color appears. Pour 3½ ounces of reducer into the solution; should turn dark brown or black. 18. Quickly pour it over the mirror, rock tray. 19. When specks appear stop and rinse.





Make Your Garden Grow

[Continued from page 144]

Grass seed should be planted in the Spring or the Fall, never during the Summer.

Rake the soil thoroughly before sowing grass seed. Make sure that all rocks, scraps of wood, etc., are removed. Spread the seed by means of a spreader. Then roll the lawn with a moderately heavy roller. This action impresses the seed slightly into the soil and helps to level off irregularities in the lawn surface.

Some experts say that the lawn should not be sprinkled until the grass shows signs of sprouting. They say that there is enough moisture in the soil plus dew to provide the necessary germination. But if it does not rain for a week, give the soil a thorough and precautionary watering. Sprinkle the seed lightly, and make sure that you do not wash it out. But keep sprinkling until the water penetrates the soil. When the seed is coming up, watch weather conditions carefully. If the soil becomes dry, sprinkle lightly but thoroughly.

New grass should be first cut when it is two inches high. Keep it about 1½ or two inches high thereafter. All lawn mowers can be adjusted to enable you to control the height of cut.

The best time to plant your lawn is in the Fall. If you try to install a permanent lawn in the Spring, you face two alternatives, both bad: you can plant cheap seed which comes up immediately, but leaves bare spots in a season or two. Or you can plant good seed which takes three or four weeks to germinate. While it is germinating, crabgrass and other weeds may gain hold on your lawn and will have to be eradicated later. If you move into a house in the Spring and want grass at once, plant rye which comes up quickly. Turn it under in September and put in the permanent lawn.

Once your lawn is established, you can keep it in excellent condition by going over it carefully every Fall. Mix loam, peat moss, humus and sand together into a bushel basket. Spread the mixture over the thin spots and lightly rake in grass seeds.

Even the best-kept lawns are afflicted with weeds sooner or later. Before World War II, the home gardener could do little about this problem but get down on his hands and knees and pull out weed by weed. Now all you need is a spreader and one of the new chemical formulas which are death on weeds.

Several chemical preparations are available to eliminate different kinds of weeds. One formula—sold under different trade names—knocks out broad-leaved pests such as dandelion, sorrel, plantain, sourgrass and buckthorn. Other preparations are made especially to prevent the germination of crabgrass, probably the home-gardeners' No. 1 horror.

If you miss the early Spring treatment of crabgrass seed, you can use another preparation—patanyl mercury acetate—to get at crabgrass seedlings. Spray on this preparation at weekly intervals from three to five times beginning in early June. Grass you want to keep will discolor—but then recover, crabgrass will die.

The best advice for beginning gardeners who are trying to control weeds, is this: confide in your local garden supply store. Tell the salesman precisely what your problem is and what type of weed you wish to exterminate. He will recommend the exact formula for the job you want to do.

Tools. You need spend no more than $50 on garden tools to help you keep your grounds in perfect shape. The first essential is a four-tined spading fork. Use it to spade up the earth for flower and vegetable beds or lawn. It also does an efficient job in digging and transplanting shrubs. Use a round-point shovel for excavating and loading soil.

You will need a steel and a bamboo rake to clear lawn areas. You will also need a long run of hose, a long-handled or hand cultivator to break up clods around your plants, a hoe, a wheelbarrow, hand-pruning shears and a sprayer for weed and insect-killers, plus, of course, a lawn mower.

Buy high quality tools to begin with. The best tools usually have a natural wood finish protected by varnish. Bright, glaring paint often is used on metal or wood tools to hide defects.

You probably can rent a spreader or lawn roller at your local hardware or lawn supply store. Some stores let you use this equipment free of charge if you buy your seed from them. Last but not least, a comfortable garden chair or chaise to relax in between chores! •

Cockeyed Wheels

[*Continued from page* 155]

chanic. One of the rear tires was way down, due to a rim leak. It threw front-end caster way off on one side of the car only, giving a most uncomfortable steering effect. Due to his habit of oversteering the driver made matters worse.

Many drivers do not realize that shimmy is one of the most certain proofs of alignment trouble, if it is the low-speed variety coming in when the car is traveling 35mph or less.

When high-speed shimmy persists in spite of properly balanced wheels and tires the trouble may be the same excessive caster (in which case the front wheels will go into their gyrations at almost any car speed), but in addition the shimmy may be due to excessive toe-in or toe-out. So whether or not there is any hint of misalignment as revealed by oddities in tire wear it pays to head for an alignment man if any of the conditions I have mentioned come your way.

And it will help if you have some idea of what he is doing to the front end. His equipment varies widely but all he is trying to find out is the situation with respect to eight features of what is known as steering geometry. The first four are discussed a lot wherever car fanciers meet even though the particular elements of alignment may not be fully understood. Mention toe-in to the motorist of reasonable experience and he understands that this means the front wheels are closer together at their fronts than at their rears. He knows too that camber means the outward tilt of the wheels although he may not understand that the idea of this is to bring the center of each front tire tread as near as is possible for it to be directly under the point of load. The third element —caster—immediately brings a picture of those little wheels on the legs of heavy furniture, but not many realize that the front wheels' backward tilting not only eases steering but helps the front wheels run straight. Then, fourth, we have toe-out which applies only on turns. If it wasn't for this the inside wheel would be dragged during a turn.

But the other four points to be considered in the over-all alignment picture are less familiar and it requires no imagination to see why a mechanic these days can't check alignment the way he inspects the oil level in the crankcase. He has to know all the angles to what is known as "kingpin inclination." That is, kingpins must tilt outward at the bottom. If it wasn't for this we'd have to risk setting the wheels for too much camber. Right here let's pause to reflect over the fact that the five elements so far mentioned serve a common purpose in what might be considered a merging of pivots. Here's how you can keep this in mind for the rest of your motoring career:

Hold your hands and arms outstretched, palms facing and a foot apart. For purposes of comparison your hands are now your car's front wheels. Now move the fingers of one hand a little closer to those of the other to represent toe-in. To get the camber effect turn the lower edge of each hand nearer to that of the other, but without changing the "toe-in." Next—to introduce caster—tilt your hands a bit so that the fingers are higher than your wrists. If you will swing your hands from the wrists right or left to simulate turning around a curve you will not find it difficult to believe that the inner wheel will turn in a smaller arc. The longer the car's wheelbase the less toe-out; the wider the tread (distance between wheels) the more the toe-out.

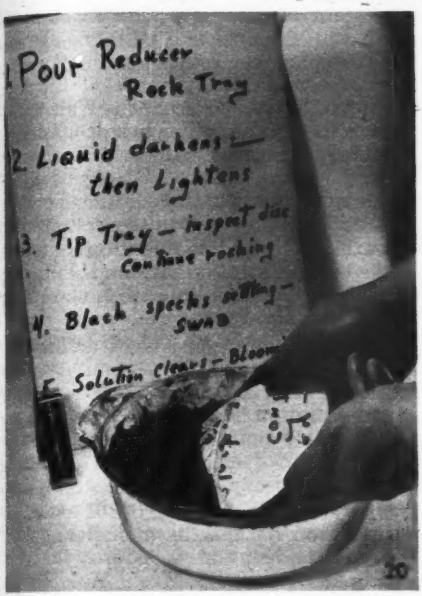
Finally, there is "steering control alignment" or the complete situation existing between the steering wheel and the movement of the front wheels. It calls for checking not only the steering gear but all of the steering linkage.

Shock absorbers that need fluid will invite temporary misalignment, and because fluids vary in viscosity during temperature changes, a car that steers to perfection at 10° below may not be so pleasant to drive at 90° in the shade or vice versa. Trouble with rear shock absorbers will also adversely affect the front end's health. So will a weak or broken rear spring. And don't forget that the front coil springs can cause a lot of trouble if weak and sagging.

Alignment continues to be one of the least expensive items in car care. Yet it provides a huge slice of driving pleasure and safety plus real savings in tires. •

Silvering

[*Continued from page* 158]

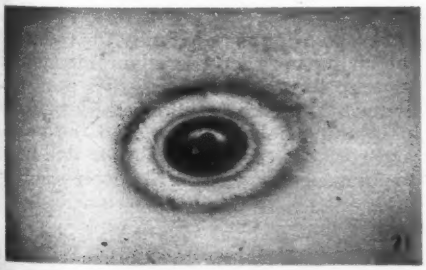


20. Swab mirror with cotton and when the solution starts to clear remove from the tray.

processes for silvering a telescope mirror, the most popular being the Brashear process. This is the method we shall use as it will yield a brilliant reflecting surface.

Silvering won't hide any pits or scratches in the glass surface. If anything, defects will show up more when silvered. So, if you didn't get out all the pits, this is your last chance. Remember this is your pride and job—you started with a rough piece of glass and ground it to a perfect sphere, then you took off a few millionths of an inch of glass for parabolizing and now you are going to add about half a millionth of an inch of silver to complete the job. The thrills you will experience in creating a perfectly ground, polished and silvered mirror will be many.

21. Crystal of iodine placed on back of the mirror is a key to thickness of silver coating.



The success of your mirror depends mostly on two factors, the chemicals you use and cleanliness. The chemicals are usually labeled C. P. (chemically pure) and U. S. P. (United States Pharmacopoeia). For silvering we must use those of the highest purity, the C. P. type. Your local druggist should be able to supply you with most of the chemicals necessary. Otherwise they can be procured from the John H. Winn Co. located at 124 West 23rd Street, New York 11, N. Y. This company specializes in selling chemicals in small quantities. Be sure to mention C. P. when ordering. For our mirror we will need the following:

Nitric acid—1 oz. specific gravity 1.42
Ammonia—1 oz. specific gravity .90
Caustic potash—2 oz.
Silver nitrate (chlorine none) 1 oz.
Alcohol (rubbing)—8 oz.
Distilled water—1 gal. (1½ gal. for safety)
Stannous chloride—2 oz.
Sugar (Domino type)—2 oz.

If you do not have a scale, ask the druggist to weigh out the chemicals for you. In addition to the chemicals, you will need the following:

Absorbent cotton
Rubber gloves
Medicine dropper
Chamois skin (extra smooth)
Goggles
Glass rod
Thermometer
3 receptacles (1. quart size; 2. pint size)
Graduate—8 oz.
Glass tray—approx. 8" dia. and 3" deep
Blotter

The first step is to make up the reducing solution. Wash out a quart bottle with soap and water. Rinse with distilled water then rinse with alcohol. Pour in 20 ounces of distilled water, add ⅛th ounce nitric acid, two ounces of sugar (12½ Domino tablets). Place on stove and let it simmer for ten minutes. After it has cooled, add 3½ ounces of alcohol. Put aside until later.

Now put on the rubber gloves and wash

[*Continued on page* 164]

[*Continued from page* 163]

them with soap and water, rinse with alcohol. Wash thoroughly all receptacles and implements (except the mirror) that will come in contact with the solutions. Use soap and water then rinse with alcohol. The alcohol will produce a degree of cleanliness, but not nearly enough. So mix an equal amout of water and nitric acid (four ounces of each) and scrub all the receptacles again. Rinse off with distilled water. Pour half a pint of distilled water into the glass silvering tray and set it aside.

Wash the mirror with soap and water then scrub with absorbent cotton and alcohol. Wrap a pad of absorbent cotton around one end of the glas rod and hold it in place with a rubber band. Dip the swab into the diluted nitric acid and go over the surface and sides of the mirror repeatedly with considerable pressure. Keep this up for at least seven minutes. Keep your hands off the surface of the mirror and *do not allow the surface of mirror to become dry, not even for a second.* For some unknown reason, the silvering will fail if the mirror is allowed to become dry at this stage. Rinse the mirror then swab vigorously with cotton and a saturated solution of stannous chloride. Rinse again in warm water, then with distilled water. Now quickly place the mirror into the silvering tray which contains the distilled water and add enough water so that the surface of the glass is submerged.

Set the tray aside and make up the silvering solutions. Begin with the silver nitrate. Place a half ounce of silver nitrate crystals into the large receptacle and add eight ounces distilled water. Mix for a minute or so till the crystals dissolve. Pour off 1/6th of this into one of the small receptacles and label it "reserve solution."

In the second small receptacle, place ⅓rd ounce caustic potash. Add eight ounces distilled water and label "caustic solution."

Add about 2½ teaspoons full of ammonia to the silver nitrate solution. This will turn the solution dark brown. Now continue adding ammonia using the eye dropper. Add 20 drops at a time then stir briskly for 15 seconds. Keep this up and watch for signs of clearing. Be careful at this point because the clearing happens suddenly. We must add only enough ammonia to clear the solution and not a drop more. Decrease the number of drops to five and stir for 30 seconds. Wait a full minute then add another five drops of ammonia. Tiny specks will be seen floating around in the solution. Disregard them. Our aim is to clear the solution between the specks. When the solution has cleared, back titrate by adding five drops at a time of the reserve solution. Stir and wait, keep this up until the solution begins to turn slightly cloudy.

The next step consists of adding the caustic solution and the possibility of explosion should be discussed here. If the caustic solution is poured rapidly into the silver nitrate ammoniacal solution there is a possibility of forming silver fulminate which is very explosive. There is no danger, however, if the temperature is below 50° (reason for the thermometer) and if the caustic solution is poured in very *slowly* and mixed *vigorously*. Actually the concentration of chemicals used here is rather low and quite unlikely to cause explosion, but it's good to know that the possibility exists. So wear goggles and slowly pour the caustic solution into the silver solution, never the other way, stirring rapidly all the while.

To the above solution we again add ammonia. Start with one teaspoonful and then taper off to five drops at a time. Stir for 30 seconds and wait for 60. Keep this up until the solution just clears (should appear grayish at arm's length). Avoid an excess of ammonia. Chances are you will add too much ammonia. If so, add about 15 drops of reserve solution and stir vigorously. Continue adding reserve until the mixture turns a straw color similar to weak tea. If you have used up all the reserve solution without obtaining the straw color, mix up some more.

The solution is now ready for reduction which means that the silver nitrate will give up its silver. Pour the 3½ ounces of reducer into the solution and mix. Then pour the whole mixture onto the mirror and rock the tray. The solution will begin to change color, turning almost black, then

[*Continued on page* 190]

The '58 Plymouth

[*Continued from page* 81]

Unfortunately, there is no six-way power seat available for the Suburban at this writing but the manual seat on our test car was well-pitched and comfortable. The upholstery, though in excellent decorator taste (as they say in the ads), would suit me better if it were all-vinyl or all-leather. Combination vinyl or leather-plus-fabric is about as sensible in a wagon as holding a conference of zebras in a small hotel room.

While I'm at it I might as well blow my stack good and clean and state that I find 99 per cent of all front seats on American cars are on the lousy side. There has never been a front bench seat made that compares with two bucket seats. And as most bench seats today will only accommodate two passengers in comfort or three in misery (due to transmission and drive-shaft tunnel), why can't someone (aside from Bunky Knudsen and his Pontiac Bonneville Special) have guts enough to offer bucket seats as optional equipment for *all* cars? So far as safety is concerned, bucket seats are miles ahead of bench seats. As for comfort—well, it's like "Would you rather sleep on a rock or a brand-new Simmons?" Okay, release the pressure, Doc; I'll get back to the Plymouth Suburban.

This is a truly fine wagon and a terrific buy, especially when compared to the competition. You can pay almost $6,000 for an American wagon and get not one bit more room and not much additional performance. On the 122-inch wheelbase, this Plymouth with torsion-bar suspension in front will probably out-handle most station wagons made in America, regardless of price.

One of the big plus features of the Suburban we tested was the electric tailgate window which can be lowered to any desired height, or raised from the inside, by a little switch on the instrument panel—so no dog or Aunt Nellie can change the height the driver gives the window. You don't have to be a Madison Avenue Big-brain to recognize the advantages of this, especially if you have little monsters (in the form of children or other pets) roaming around the rear interior as you tool down the pike. In fact, you could grab Gramps on his worst night, shove his head out the rear window, lock him up by his Adam's Apple between the window and the rear of the roof and drive him around until the Old Grandad in Old Grandad has evaporated.

As optional equipment there is a third seat that faces the rear, though the wagon we tested was not so equipped. This backwards seat, however, is real handy for placing cop-spotters or carrying relatives who aren't rich, just ugly.

The instruments are well-placed and you won't have to have a Cyclops Eye to read them, as you will need with some Michigan Monsters. There are three transmissions available. The one on my test car was the Torque-Flite three-speed pushbutton deal. For less dough you can buy the less-efficient Power-Flite. This is a two-button job designed especially for guys with bad aim. There is also a synchromesh manual transmission available. It says in the brochure, "Overdrive is available except on models equipped with high performance chassis"—which undoubtedly means *something* in code. One engine I forgot to mention is the in-line L-head Six but I don't recommend it for your Suburban.

In summing up, I have watched the Plymouth Suburban's progress since its very beginning more than eight years ago and though a lot of changes have been made (not the least of which is the price), I still must rank it as a Great Buy. In its early days it was an unpretentious little steel box that originally came in all colors, providing the color was Moosenose Brown—there was no other choice for quite a while. Today it would be impossible to spot a Plymouth wagon, visually, having less quality than the most expensive station wagon made. It has roominess and real comfort.

The Plymouth Suburban, in its own price class, is as outstanding as a $20 goldpiece in a penny bank. •

When answering advertisements please mention
MECHANIX ILLUSTRATED

It's Coming!

New miracles of science that you'll be seeing soon.

PLIABLE "light bulbs" made of plastic or steel mesh have been developed by Westinghouse engineers. The flexible sheets are coated with a phosphor and light up when supplied with power. They are seen as the forerunner of window shades, drapes and other bendable materials that actually produce light.

Regrowth of an adult animal's spinal cord has been made possible by use of a new technique developed by doctors at Columbia University's College of Physicians and Surgeons. A nylon tube impregnated with cellulose acetate allows regrowth of severed nerve fibers until they close the gap.

Nuclear treated golf balls give longer driving distances and have tougher covers than conventional golf balls, according to researchers at the B. F. Goodrich Co. The irradiated golf balls are not radioactive and cannot be distinguished by Geiger counters. The "atomic golf balls" are not yet in commercial production.

Scientists of the Hurlbut Paper Co. have succeeded in producing a paper based on metal fibers that conducts heat and electricity and exhibits magnetic properties. The new paper shows resistance to extreme temperature.

Skin taken from a cow embryo has been used to replace skin from human volunteers in the labs of the New York University-Bellevue Medical Center. The cow skin is taken from a three-month-old calf embryo and, though not as satisfactory as a human skin graft, may lead to use of animal skin for human surgery.

Development of new ceramic materials that bend was reported by researchers at the University of California. The flexible ceramics may mark a major breakthrough in the search for strong, light compounds capable of withstanding high temperatures. Such compounds would be of enormous value in missile and rocket development.

Israeli scientists have developed a new substance to replace blood fluid in human beings. The new substance has been used successfully on dogs and is now being tested on human volunteers. It will need no typing to conform with human blood types.

The British Navy is developing a new drug that will enable frogmen to stay under water for longer periods. The drug is expected to prevent "oxygen poisoning"—the convulsions and lack of consciousness that result when divers breathe pure oxygen for a long time.

Soviet scientists claim they have developed a "robot" which can apply plaster, lay bricks and build houses. According to the Soviet news agency Tass, the new machine can construct a five-story brick house in 60 days.

Solar-powered automobiles before the end of this century were predicted by James C. Zeder, vice president of Chrysler Corp. Improvement of silicon converters and the development of small, efficient storage cells will make the "sun cars" possible, he said.

A helium-powered gun firing a bullet at 16,000 mph will be used next year at Moffett Naval Air Station, Calif., to study the problems of missile re-entry into the earth's atmosphere. The weapon fires a spherical bullet about the size of a .45-caliber slug with helium that has been compressed by an explosion of gunpowder.

Bright chromium plating is improved by passing sound waves through the plating solution, according to researchers at the National Carbon Co. labs in Parma, Ohio. The sound waves make the chrome plate harder, brighter and better able to stick to the base metal.

The U. S. and Europe may be exchanging live TV programs by 1959, according to the American Iron and Steel Institute. Construction of 60-ft. steel antennas across Atlantic land masses will enable the pictures to be relayed. Breakthrough occurred when it was discovered TV signals can go beyond the horizon if power is sufficient.

—*Lawrence Sanders*

Speaking of Jobs . . .

Tire Sculptress

JUNE BLACK is one of a kind. She's a tire sculptress for the development department of the Firestone Tire & Rubber Co. in Akron, Ohio. Her job is modeling designs of tire treads in clay. She works from sketches, modeling the clay over a wooden frame, as in photo above. After the clay designs are approved, plaster casts are made from the designs. Then metal molds are cast which are used to make experimental tires for testing. Technical skills as well as artistic talents are required as June molds sections of a proposed tread design and ends with a replica correct to 1/100 of an inch. She uses calipers, photo below, to check tread accuracy. It's the job she's always wanted. •

Tom Tests '58 Cadillac

[*Continued from page* 85]

easy 0-60 in ten seconds flat. It could do 100 mph without causing your Adam's apple to wilt and, to top this off, on trips it averaged between 19-21 mpg. Finally, the Caddy I owned eight years ago delivered in New York City fully-equipped with radio, heater and windshield-wetters for less than $3,000.

For a long time, Cadillac enjoyed the highest resale value in the industry. It was possible in the days when I was a Cadillac owner to buy a Cadillac, run it hard for a year and then get within $100 of what you paid for it new—because Cadillacs were that hard to get. Today the story has altered somewhat. I know that some dealers pretend there's still a five- or six-week wait to get the model and color of your choice. But there are other dealers who can produce one or a dozen almost before you can get the door open.

I am well aware that regardless of what I write, thousands and thousands of people will continue to consider Cadillac *the* most-desired piece of equipment a man can own, equaled only by a stockholder's pass through the Pearly Gates.

Make no mistake about it—Cadillac is a desirable car for many Americans and the prestige it lends cannot be overlooked. Many of the bigs in every line consider a Cadillac the hallmark of accomplishment.

What *is* the Cadillac for 1958? Well, in my opinion it is a good, well-equipped automobile for suburban and city use. It offers luxury accessories and superb passenger comfort at normal cruising speeds. It is not the best-handling car in its field, nor even the easiest to steer, and its roadability at high speeds is not up to that of many other American cars.

In summing up, the Cadillac has an excellent engine, docilely tuned, and there's no doubt that in many communities it will out-Jones the Joneses across the street, even though it may fail to impress the rod-minded kids of the neighborhood. If you are the president of the local bank, your biggest depositor will definitely feel you're the right sort if he sees you driving a Caddy. There are many men in many jobs in this country who need that good, solid look of success and the Cadillac will give it to them. •

Profits From Shoes

[*Continued from page* 69]

and made of prime quality—hence more expensive.

Machine operators, paid on a piecework basis, had to be given a higher rate to compensate for the extra time involved in each operation. All the way down the line, bigger shoes meant higher costs.

Since retailers refused to clog their inventories with the 84 different sizes in each of the styles King-Size planned to produce, the company staked its future on a mail-order operation.

Starting with a modest catalogue of two styles, ultra-conservative black and brown shoes in whole and half sizes from 10 to 16 and widths from AAA to EEE, they began business in Lazarus' bottom stock factory basement. Ads were placed in men's magazines and the partners sat back waiting for business to pour in. And they waited . . . and waited . . .

"Just because a man has a large foot doesn't mean he'll take any old shoe from a mail-order house," says Lazarus. "Our big mistake was trying to sell him just another bread and butter shoe, when what he really wanted was a shoe with up-to-date styling."

King-Size got off the canvas in 1948 with a new line fashioned around contemporary styling adapted to the needs of a big man. Business picked up immediately and has been expanding ever since.

Now housed in a three-story loft in Brockton's business district, King-Size has its own post office unit right on the premises to handle its mailings. More than 3,000,000 pieces of direct mail advertising material are sent out each year from its huge file room where a dozen girls handle some 250,000 addressing stencils of active customers. A stock of 50,000 pairs of shoes in the $15 to $17 price range is always on tap.

While King-Size still advertises in men's periodicals, much of its new business comes on the recommendations of satisfied customers. Shoe trees, rubbers, slippers, jackets, overshoes, socks, sneakers, shirts and sports jackets are also part of the regular line now, due to the customers' demands.

A pair of dress shoes—brown or black cashmere grain or calfskin—are $15.95 at King-Size. Suede, charcoal brown calf or black llama grain sell at $14.95. Moccasins and all-purpose wine oxfords cost $12.95. Highest priced items are fleeceline chukka boots, $17.75 a pair, cordovans at $18.95 and an insulated hunting boot at $19.95.

Returned shoes run about four per cent, a comfortable low in the mail-order business. Practically all of them are caused by incorrect sizing among new customers. Once a customer has ordered, his size is kept on file.

Pointing out that experts predict the ever-growing American male will reach an estimated six-ft. six-in. by the year 2,000, Lazarus predicts that the business of keeping big men foot-happy with quality shoes at a reasonable price, will be an ever expanding one. King-Size is ready for the big-foot boom. •

Spinning For Big Trout

[*Continued from page* 97]

surface. If that draws a blank, let the lure sink to the count of *one-and-two-and* right up to ten, then retrieve fast. Find the right depth and when the fish bite, stick to it. There's no hard and fast rule for lake fishing—you must experiment. I usually start with the deep, bottom-bumping slow retrieve.

If you notice trout following but not grabbing, try a fast retrieve and a stop, letting the lure flutter down five or ten feet. Then retrieve fast again for 20 feet and stop again. Few trout can resist this technique.

As the surface warms up with the advancing season the fish move out into deeper waters and you need a boat and a lure that will bump bottom or retrieve down where you find the fish. They will find a layer of water just the right temperature and move towards shore only after the sun goes down.

A word of caution for beginners; all real sportsmen follow a code for trout streams that makes friends and better sport for all. Always consider the other angler. Never plunk a lure where he is fishing. Let him move on before trying his pool, and don't try to get ahead of him if he got to the stream first. Be polite and help spread the good fellowship of angling.

Happy fishing now. •

Dear Editor

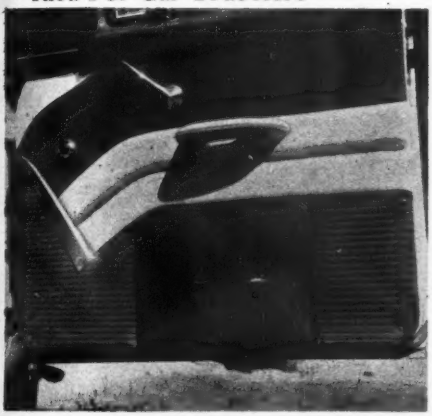
[*Continued from page* 29]

• *Happy Golden Hammer Winner*

I received the Golden Hammer Tie Bar which you sent to me recently. Let me say that few things in life have given me greater pleasure than winning this award. It is certainly handsome and it has been admired by all who have seen it. I have been a constant reader of your magazine for more than 20 years and I admire most the sustained excellence of your articles. I have never missed a word written by Uncle Tom and miss the Editor's Workbench. Keep up the good work. Your (Nov. '57 MI) How To Service A Bendix Washer has saved me many pounds already.

Dr. Goen Osthumpen
Vereeniging, Tvl.
South Africa

• *Idea For Car Travelers*



In my business I travel extensively by car and on every trip find maps, hotel guides, expense book, etc., overflowing the glove compartment space. Looking for a solution to the mess, I hit upon the following ideas.

I bought two plastic-covered zipper school binders. Since I was unable to find any ringless binders I clipped them off with a bolt cutter and applied a neat covering of plastic tape to protect papers from rough edges. I attached the binders inside each of the front doors with sheet metal screws. In color matching the upholstery, they look neat, compact and custom-made. They provide roomy pockets in which to slip maps, etc. I hope this idea may be of some use to other MI readers.

K. M. Simpson
Woodacre, Calif.

Tom's Fabulous Cruiser

[*Continued from page* 103]

Tom's cruiser also boasts such extras as alcohol and electric stoves, special awnings at bow and stern, and a dazzling array of housekeeping appliances such as vacuum cleaner, fans, blendor, electric toaster and electric heaters. They work off a 12-volt system when *The Rooster* is at sea and from 110 volts when tied up at a dock.

The sleek and powerful cruiser can sleep six persons: there are two 6′6″ bunks forward and the four-seat dining alcove in the cabin amidships can be converted into a double bed. Another double bunk is formed by an ingenious McCahill modification which enables the twin hatch covers over the engines to be covered with a board and foam rubber cushions.

Tom, who for many years was a sailboat man and won many hot races on Long Island Sound, was converted to power when he saw his first Egg Harbor 30, which is *The Rooster's* official class designation. He examined Egg Harbors in every stage of their manufacture at the New Jersey boatyard where they are custom-built. He was especially impressed by the heavy oak stem and keel and the ⅞″ mahogany planking. A big man (he once wrote admiringly that the glove compartment of a car he tested was "big enough to hold a fifth of whiskey in case Aunt Matilda is attacked by a mad horsefly"), Tom likes lots of living and storage space around him. *The Rooster* has plenty of both.

Uncle Tom's *Rooster* was delivered in November of 1955. He planned to take her to Florida early in December so the first modification he made was to install thick red carpeting over the standard rubber mats on the cabin floor. This modest improvement helped make the cabin, during the winter shakedown cruise, as warm as "a bug on the back of a St. Bernard." From then on, *The Rooster* continued to acquire a swarm of aids to comfortable cruising, most of which are shown in the photos accompanying this article.

There are about 175 Egg Harbor 30s on the water at present. Each has a 30′7″ overall length, 10′6″ beam and 6′4″ headroom, the latter affording Tom's pate a clearance of about an inch. So far as we know, *The Rooster* is the only one in the

[*Continued on page* 172]

See "The Ed Sullivan Show," CBS-TV, Sunday nights.

New Brownie Starflash Camera takes *color slides* as well as black-and-white and color snapshots. Built-in flasholder. Double exposure prevention. Brownie Starflash Camera, $8.95 or $1 down.

New Brownie Starflex Camera has hooded viewfinder, takes color slides and snaps. Brownie Starflex Camera, $10.75. Kodak Rotary Flasholder shoots six bulbs without reloading, from $10.95.

See your shot big and clear before you snap it with hooded viewfinder on Kodak's Duaflex IV Camera. Fast, pre-focused Kodet lens. Kodak Duaflex IV Camera, $17.95 or $2 down.

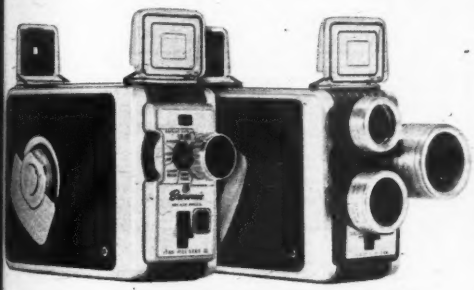
New Kodak Pony II Camera for 35mm color slides. Just dial for picture you want. Make one setting, shoot. Kodak Pony II Camera, $26.75 or $2.75 down. New Kodak Generator Flasholder works without batteries! At your photo dealer's soon.

New Kodak Signet 50 Camera for precision photography has built-in photoelectric exposure meter. Extremely fine *f*/2.8 lens. Flasholder, two reflectors. Kodak Signet 50 Camera, complete, $82.50 or $8.50 down.

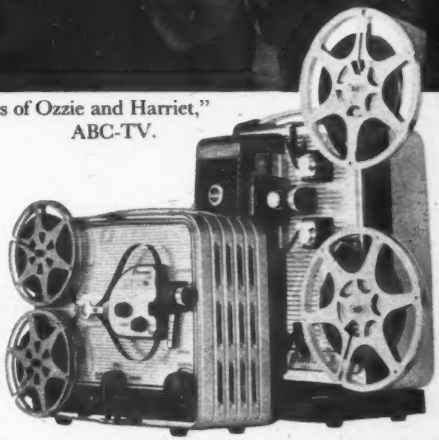
Prices are list, include Federal Tax and are subject to change without notice.

Kodak TV stars invite you to the most exciting photo show ever...

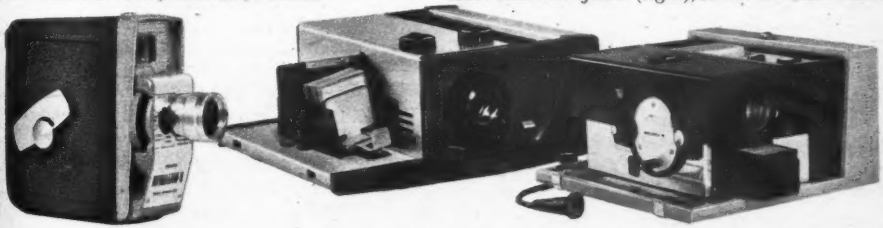
See "The Adventures of Ozzie and Harriet," ABC-TV.



Brownie Movie Camera, *f*/2.3 (left), takes color movies with snapshot ease. Just make one setting . . . aim . . . and shoot! Brownie Movie Camera, Turret *f*/1.9 (right), gives you 3-lens range at 1-lens price —takes normal, wide-angle, telephoto shots. Brownie Movie Cameras from $29.95 or $3 down.



Big screen 8mm movies. You show 8mm movies 3 feet wide with Brownie 300 Movie Projector (left). Shows single frames, reverse-action. $6.50 down. Brownie 300 Movie Projector, $64.95. For extra-large-screen movies 5 feet wide, the Cine-Kodak Showtime 8 Projector (right), $123.50 or $12.50 down.



New Kodak Medallion 8 Movie Camera, *f*/1.9, loads in 3 seconds with film magazine, weighs only 23 ounces. Kodak Medallion 8 Movie Camera, *f*/1.9, $106.50.

Shows color slides big-as-life. Kodak 300 Projector is only 5 inches high, easy to carry as a portable radio. Kodak 300 Projector, $64.50 or $6.50 down. New Kodak Cavalcade Projector shows slides *automatically!* You turn it on . . . it does the rest. At your dealer's soon!

EASTMAN KODAK COMPANY, Rochester 4, N.Y.

Kodak

CHICAGO, ILLINOIS

Big news on the road today is Quaker State. More and more car owners are changing to this years-ahead pure Pennsylvania oil that keeps car engines cleaner and lubricates better. It's more economical, too—because it lasts longer! Always ask for Quaker State . . . *it's the best motor oil money can buy!*

QUAKER STATE OIL REFINING CORPORATION, OIL CITY, PA.
Member Pennsylvania Grade Crude Oil Association

Tom's Fabulous Cruiser

[*Continued from page* 169]

Egg Harbor fleet that regularly carries two bicycles aboard for on-shore peddling by the McCahills when a car is not at hand. All in all, *The Rooster* is quite a vessel and Uncle Tom can spend a week or a year aboard her and be (as he once wrote of an automobile) "as comfortable as a mouse in a cheese factory." Lucky mouse!

—*J. Robert Connor* •

Make Son's Bike Safe

[*Continued from page* 98]

cover and bearing of front-wheel bearings. Clean with kerosene and oil lightly.

Bearing cones need adjustment to keep wheel from wobbling. Don't screw too tightly or you'll bind wheel's rotation. This is two-wrench job: one takes up cone, the other tightens outside nut. Take it up until just a trace of binding occurs after outside nut is tight, then back off about half-turn on cone.

Rear axle acts as coaster brake. Take apart, clean. Sprocket end disassembles from one side. Be sure to reassemble from proper side of hub. Oil with No. 20 oil.

Missing spokes can warp a wheel so replace them immediately. Tighten loose ones; they cause wheel wobble. Check tension by squeezing two parallel spokes.

Tires do not have to be removed to repair a leak. Locate leak, pull one side of tire free from rim, then yank tube out so you can patch it.

Chain links are easy to keep clean and special kits are available for replacing worn parts. Adjust tension with twin set screws or with a slotted axle. Chain should have slight sag, usually half an inch. Oil lightly.

Crank hanger bearing should be cleaned. Remove pedal opposite sprocket as first step in disassembling. Then unscrew lock-nut and pull off keyed washer. Slotted adjusting cone should be removed with a screwdriver or spanner wrench. Oil lightly every four months with No. 20 oil.

There is just one more thing. If you would like information on developing a bicycle safety program in your town or city, write to Bicycle Safety Program, Johnson & Johnson, New Brunswick, N. J.

In the meantime—happy cycling! •

It takes tremendous power to roll today's huge trucks! In trucks as in passenger cars, Champions deliver *full-firing power.*

Q. Why do 8 out of 10 truck makers use Champion spark plugs?

A. Champions give full-firing power. Put new Champions in your car every 10,000 miles. You'll get an *immediate* boost in horsepower...and save gasoline, too!

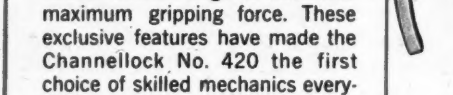
Champions are engineered for every car built by Ford, General Motors, Chrysler, American Motors, Studebaker-Packard and every major foreign maker

CHAMPION

Be sure
it's a genuine
CHANNELLOCK

Why? Only Channellock has undercut, interlocking channels that can't slip no matter how tight you grip. Only Channellock has the reinforced tension edge to withstand maximum gripping force. These exclusive features have made the Channellock No. 420 the first choice of skilled mechanics everywhere. So be sure you get only genuine Channellock pliers. Look for the trademark on the handle.

ASK YOUR TOOL SUPPLIER FOR CHANNELLOCK PLIERS — BY NAME



CHAMPION DeARMENT TOOL COMPANY
MEADVILLE, PENNSYLVANIA

How To Stop Snoring

[*Continued from page* 91]

SIR WINSTON is a mighty practitioner of this as of so many arts. Naval sources claim his snoring rivals the ocean waves.

trivance, just a simple rule which, when followed, absolutely does away with even the most aggravated cases of snoring. Just send in a dollar—"

In town after town, the money rolled in. And the wise boy dutifully sent out the remedy to each respondent. It was printed on a plain white card and read: "Here's an absolute cure for snoring: *Don't Go To Sleep!*"

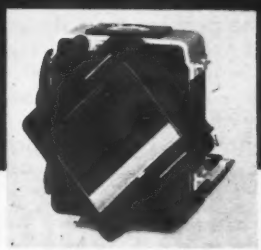
One of the rare reports on snoring points out that it was a factor in many divorce cases. In 99.8 per cent of these cases, the judge cracked the same joke during the proceedings: "Sleep and the world sleeps with you. Snore and you sleep alone." The Canadian Medical Association, in a reference to the subject, observed: "Marriages can be broken and camping parties ruined by snoring. Can tragedy go deeper?"

One woman in suburban Chicago was kept awake night after night by her husband's horrendous *Snarrrk-ug, Snarrrk-ugug* until she made him sleep on the back porch. Two years later, she wrote a letter to a newspaper: "Until I put Bob out, we were robbed twice. It's been two years now and not a burglar has been near us. At first the neighbors objected rather strenu-

[*Continued on page* 176]

ALL NEW SUPER GRAPHIC® 4x5

One look at the Super Graphic 45 will tell you that this brand new camera means business! Though smaller than its predecessor, the Pacemaker Graphic, it has even greater versatility while maintaining the 4x5 format. Size and shape have been designed for utmost user convenience. All locks and releases are convenient to adjust, large enough and properly shaped for easy operation. Swings, tilts and shifts have "click stop" neutral positions. An electric tripping button for shutter and flash is located convenient to the left hand. Focusing scale and automatic flash calculator are on top of the camera. All flash and shutter connections are internally wired, eliminating dangling cords. Revolving back lets you take horizontally or vertically composed pictures with equal ease. See this advanced new camera at your Graflex dealer's or write Dept. MI-48, Graflex, Inc., Rochester 3, N. Y., for further information.

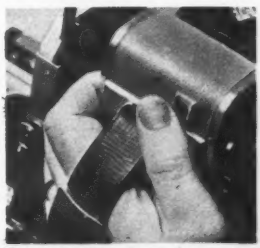


Revolving back turns 360° in either direction. Click stops at horizontal and vertical positions.

Front standard swings horizontally, tilts forward or backward, rises and shifts.

More Features...

- Automatic flash setting calculator.
- Front standard swings horizontally, tilts forward or backward, rises and shifts.
- New focusing hood for quiet, one-handed operation.
- Large, easy-to-handle coupled rangefinder cam and simplified mechanism for easy changing of cams.
- Integral rangefinder works even with wide angle lenses.
- Revolving back accepts all Graflex-made film accessories.
- Polarized 3-pin cord outlet in camera body connects to Graflite and Stroboflash and eliminates cords dangling from shutter.



Electrical body release for tripping shutter, Stroboflash and Graflite. Internal power supply and wiring.

GRAFLEX · *Prize-Winning Cameras*

How To Stop Snoring

[*Continued from page* 174]

ously, but now they are convinced Bob is a community asset."

In London, a 14-year-old girl runaway told the bobbies that "Daddy snored too loud and I couldn't sleep." In Toronto a young bride stood her husband's honking for six weeks and then something snapped. She took a kitchen pot and jammed it over his head. It took the local fire department an hour to free him.

The snore even presented the U.S. Army with one of its strangest emergencies of World War II. This very special snore emanated from a private attached to an Air Transport Command company in England. His snore was so disturbing to 37 other GIs in his hut, and company efficiency dipped so low as the sleepy soldiers tried to perform their duties with heavy-lidded eyes, that the snoring soldier's CO put him in a hut by himself.

The male of the species saws wood louder than his mate, Dr. A. H. Douthwaite told the British Medical Association not long ago. Dr. Douthwaite could offer no actual physical reason for this but he suggested that men may subconsciously be recalling prehistoric times when males would sit at the cave entrances at night and make fearsome noises to keep marauders away from their wives. Dr. Douthwaite suggested that snorers could explain this flattering theory to their wives, who might then look on the snore as a proof of affection.

Less romantic explanation of the snore: the vibration of some obstruction in the wind tunnel. Most common cause of snoring is the soft palate and uvula (the little flap at the back of the mouth) falling back into the old wind tunnel. Others: adenoids, tonsils, head colds, growths and bone deformities in the nose.

Wonder drugs won't work on snorers and in nine cases out of ten the finest surgery cannot accomplish any appreciable results. One mighty snorer had part of his

[*Continued on page* 178]

Faster, safer way to wash your car

Du Pont Car Wash gets your car so clean it drains dry, without *wiping*. Unlike ordinary detergents, it's safe for wax and it doesn't streak! At service stations and auto supply stores—½-lb. can only 75¢.

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. . . THROUGH CHEMISTRY

DU PONT CAR WASH

Superior's New Model 70 UTILITY TESTER®

FOR REPAIRING ALL ELECTRICAL APPLIANCES MOTORS • AUTOMOBILES • TV TUBES

As an electrical trouble shooter the Model 70:

- Will test Toasters, Irons, Broilers, Heating Pads, Clocks, Fans, Vacuum Cleaners, Refrigerators, Lamps, Fluorescents, Switches, Thermostats, etc.
- Will test *all* TV tubes for open filaments, inter-element shorts, burned out tubes, etc.
- Measures A.C. and D.C. Voltages, A.C. and D.C. Current, Resistances, Leakage, etc.
- Will measure current consumption *while the appliance under test is in operation.*
- Incorporates a sensitive direct-reading resistance range which will measure all resistances commonly used in electrical appliances, motors, etc.
- Leakage detecting circuit will indicate continuity from zero ohms to 5 megohms (5,000,000 ohms).

As an Automotive Tester the Model 70 will test:

• Both 6 Volt and 12 Volt Storage Batteries • Generators • Starters • Distributors • Ignition Coils • Regulators • Relays • Circuit Breakers • Cigarette Lighters • Stop Lights • Condensers • Directional Signal Systems • All Lamps and Bulbs • Fuses • Heating Systems • Horns • Also will locate poor grounds, breaks in wiring, poor connections, etc.

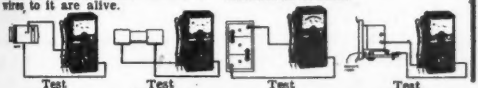
IT'S SO EASY!!

With tester's cord in outlet, current consumption of appliance is read direct on meter when line cord is connected to receptacle on panel. This typical iron takes 7 amperes (Good).

Small electric fan motor indicates 50 ohms (normal resistance).

Control circuits of most furnaces use 24 volts obtained from step-down transformer. Here's how to check room thermostat to see if wiring to it are alive.

Manual supplied with Model 70 shows meter needle should move to right when test leads are connected to pins 3 and 4 of this 6AU6 tube. Procedure for testing all tubes used in TV are detailed in manual.



Test Generators — Test Auto Fuses — Test Storage Batteries — Test Circuit Breakers

INCLUDED FREE!!

This 64-page book—practically a condensed course in electricity. Learn by doing.

Just read the following *partial* list of contents:

• What is electricity? • Simplified version of Ohms Law • What is wattage? • Simplified wattage charts • How to measure voltage, current, resistance and leakage • How to test all electrical appliances and motors using a simplified trouble-shooting technique.

• How to test all TV tubes; also simple procedure for determining which specific tube (or tubes) is causing the trouble.

• How to trace trouble in the electrical circuits and parts in automobiles and trucks.

Model 70 comes complete with above book and test leads. Only . . . **$15.85**

READ THIS! READ THIS! READ THIS!

You don't pay for the Model 70 until AFTER you have examined it in the privacy of your home! Model 70 is

SHIPPED ON APPROVAL

NO MONEY WITH ORDER — NO C.O.D.

Try it for 10 days before you buy. If completely satisfied then send $3.85 and pay balance at rate of $4.00 per month for 3 months — No Interest or Finance Charges Added! If not completely satisfied, return to us, no explanation necessary.

MOSS ELECTRONIC DIST. CO.
Dept. D-451 3849 Tenth Ave., New York 34, N. Y.

Please rush me one Model 70. If satisfactory I agree to pay $3.85 within 10 days and balance at rate of $4 per month until total price of $15.85 plus postage is paid. If not satisfactory, I may return for cancellation of account.

Name _____

Address _____

City _____ Zone _____ State _____

Made $900 IN SPARE TIME

"I did very well last year with my Foley equipment, about 950 saws, in my spare time. About $900 for me."—Leo H. Mix.

You can make up to $3 or $5 an hour in Spare Time. With a Foley Automatic Saw Filer you can file hand, band and circular saws better than the most expert hand filer. Cash business—no canvassing. No eyestrain, no experience needed.

FREE BOOK "MONEY MAKING FACTS"

shows just how you can start at home in spare time, with small investment, no overhead—and develop into a full-time repair shop. Send coupon today for this practical plan. No salesman will call.

SEND COUPON FOR FREE BOOK

FOLEY MFG. CO., 418-S, Foley Bldg. Minneapolis 18, Minn.

Send me free book "Money Making Facts"

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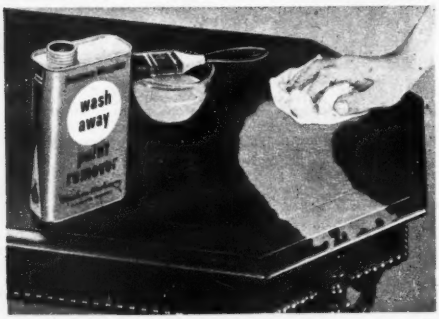

Wash off old paint with water!

Amazing how easy it is to use this miracle new WASH-AWAY Paint Remover. Just brush it on . . . wait a few minutes . . . wash off with water — your surface is clean, ready to refinish. Ideal for removing old finish from delicate antiques. Fine for outside use . . . siding, shutters, porches, boats. No scraping! Nonflammable!

AT SHERWIN-WILLIAMS DEALERS EVERYWHERE!

listed in yellow pages of phone directories

How To Stop Snoring

[*Continued from page* 176]

soft palate removed—but his snore merely changed from deep bass to baritone.

Snoring is so embarrassing to thousands of men that inventors have been working on cures for centuries. The U.S. Patent Office has issued more than 300 patents to anti-snore gizmos. An Italian genius has made an anti-snoring mask—it contains a propeller that rings a bell, wakening the snorer. But simpler methods work quite as well.

Since you can snore only on your back, the trick is to stay on your side or face down as you sleep. Sewing or otherwise fixing a hard object like a spool or knot to the back of your pajama jacket may do the trick. Or you can buy a T.O.D. (Turn Over, Darling) from the Norman Dine Sleep Center in New York. The T.O.D. is a battery-powered buzzer that goes under your pillow. Your spouse or roomie has the control.

All snorers are mouth breathers. If you are merely a habitual mouth breather, without any chronic nasal congestion, you can tape your mouth shut at night until the habit of breathing through your nose is established.

The Encyclopedia Americana recommends a bandage over the crown of the head and under the jaw—like the one sported by Marley's ghost. Another source suggests using two pillows to tilt the head forward, and Dr. William Bolton points out that a collar used in broken neck cases keeps the neck extended and the uvula away from the throat. But the best cure of all, from the snorer's viewpoint, is the one used by a Long Island throat specialist. He bought his wife a pair of ear plugs.

CHANGE OF ADDRESS . . .

Please notify us six weeks in advance. Supply us with both your old and new address, including address label from current issue if possible. Copies we mail to your old address will not be forwarded by the Post Office unless you pay them extra postage.

Mail change of address to

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Subscription Department
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Greenwich, Conn.

Pictures like this with a simple camera and a

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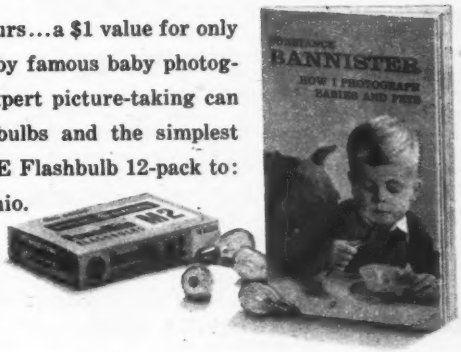
and this 64-page illustrated book tells how! Yours...a $1 value for only 25¢..."How I Photograph Babies and Pets," by famous baby photographer, Constance Bannister. Reveals how expert picture-taking can be child's play with G-E PowerMite Flashbulbs and the simplest camera. Send 25¢ and the top panel of any G-E Flashbulb 12-pack to: General Electric, Box 5601B, Cleveland 12, Ohio.



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ONLY $2.49 (10 FT.)

MEASURES UP! the *Evans* KING-SIZE TAPE

IT STANDS UP STRAIGHT
6-8-10-12 FOOT LENGTHS

Long upright measuring jobs are easy with Evans King Size. Blade is a full ¾" wide... 33⅓% wider than ordinary tapes. Stands straight up or lays down flat—won't bend or buckle. Easier to read, too. Free belt clip. Tenite utility case. Sliding end hook—for 100% accurate inside-outside measuring.

Exclusive! **NO FIGURING!**

Work in feet & inches? Read here ▶
Work in inches? Read here ▶

ALSO . . . get *Evans* Regular White-Tapes

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8" TILT ARBOR SAW
1957 MODEL—BELOW COST!

BLADE TILTS—TABLE REMAINS LEVEL

Heavy duty all cast iron and steel construction. Precision ground cast iron table. Price includes massive cast iron mitre gauge and patented motor drive that fits any motor. Cross cuts, rips, bevels, mitres, dadoes, cuts compound angles — everything expected of saws costing four times as much. Depth of cut adjustable; 0" to 2¼" — table always level. Send check or M.O. $1.00 deposits on C.O.D.'s.

SPECIAL BARGAIN — This saw is our 1957 model. Each saw is brand new — sent to you in factory sealed cartons. Sold and guaranteed direct from the factory to you at a fantastic bargain.

FREE 10 DAY TRIAL — MONEY BACK GUARANTEE

Try this famous saw 10 days. If you are not satisfied that it does the work of any tilt arbor saw, regardless of price, return for immediate money back refund.

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We reserve right to refund money if stock is exhausted

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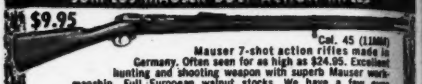

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Cal. 45 (11MM)
Mauser 7-shot action rifles made in Germany. Often seen for as high as $24.95. Excellent hunting and shooting weapon with superb Mauser workmanship. Full European walnut stocks. We have a few guns selected for specially good exteriors which we are selling for $14.95. AMMO. FOR ABOVE 11MM MAUSER RIFLE, Special: $7.50 per 100 rds.

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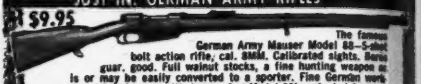

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The famous German Army Mauser Model 98—5-shot bolt action rifle, cal. 8MM. Calibrated sights. Bore guar. good. Full walnut stocks, a fine hunting weapon as is or may be easily converted to a sporter. Fine German workmanship, of course. We have a few Model 98's selected for good exteriors which we are selling for $16.95. Ammunition for above 8MM Mauser Rifle, special: $7.50 per 100 rds.

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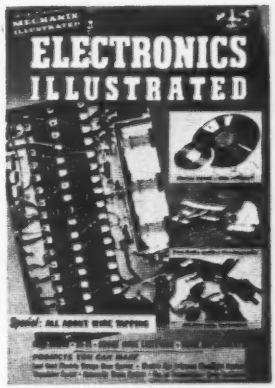

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A regular feature highlighting new ideas, new trends, new developments in electronics

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What it is and how it's used in industry and the home

NEW ION FUEL FOR ROCKETS
Hush-hush development in United States and Russian rocket fuel projects

RADIO CONTROL FOR MODEL PLANES, BOATS, CARS
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ALL ABOUT WIRE-TAPPING
How it's done—and how to guard against it

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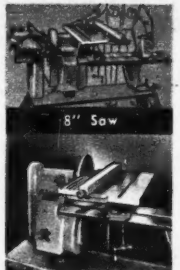

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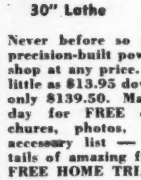

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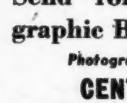

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History and size: Goodyear was established in 1898 at Akron, which still is the hub of its operations, and is the world's largest rubber firm (sales-production-personnel); more than 101,000 employees, including 71,000 domestic and 30,000 overseas.

Jobs available: Goodyear needs graduates with majors in chemical and mechanical engineering for research, product and process development, plant engineering, machine design, factory management.

Location: Employees start in Akron, may be sent to any of 29 plants in 16 states, 28 plants in 19 foreign countries, 49 district sales offices in major cities or divisional offices in New York, Cleveland, Des Moines, Atlanta, Dallas and Los Angeles.

Salary: $5,580 for beginners with BS degrees, increases according to experience; MS and PhD salaries based competitively on prevailing rates. Merit rating program continually reviews employee abilities and insures systematic advancement.

Requirements: Scientists and engineers must have BS degree from accredited school with average or better scholastic standing; no experience necessary. Veterans and non-vets receive same consideration. Employees may be married or single.

Additional benefits: Company-paid group hospital and life insurance, pension system, sick leave, military make-up pay and full tuition costs for graduate work in scientific or engineering subjects.

For further information: Write to Mr. W. F. Catron, Technical Personnel, Department 806-M, The Goodyear Tire & Rubber Co., Akron 16, Ohio.

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1

"Build Your Own" gas drive welder with this HOBART generator and

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Just connect this low cost 250 amp. unit to any good used auto engine and you're equipped for a highly profitable welding business. Investigate this wonderful opportunity for making more money by mailing the coupon below.

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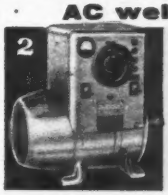
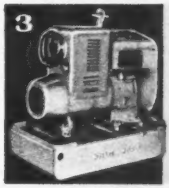


200 amp. combination that you can connect to your own power source. Lets you operate where no power lines are available. Furnishes current for welding and power for running tools, lights, motors, etc. Build your own combination welder and power unit with a good used auto engine.

air-cooled engine driven

3



Welds anywhere. Easily mounts on truck or trailer for getting to those profitable emergency repair jobs. Light, rugged, compact and air-cooled. Fine for fabrication purposes and tough enough for continuous operation on light or medium production work.

utility AC arc welder

4

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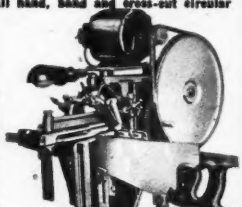

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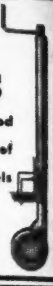

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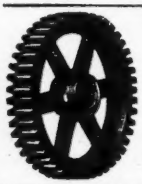

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PLUS Amazing "Slick-Shift", the new, completely automatic clutch operation.

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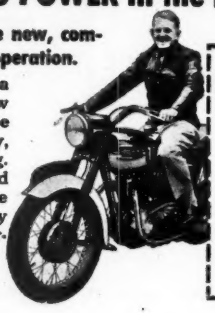
See your Triumph dealer for a demonstration ride.

The Tiger T-110, 40 cu. in. (650 c.c.)



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☐ Check here for name, address and telephone number of nearest Triumph dealer. Dept. M-3

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Towson, Baltimore 4, Md.

NAME: ..... AGE: .....
STREET: .....
CITY: ..... STATE: .....
TELEPHONE NUMBER: .....

Mail For McCahill

[Continued from page 56]

● *I wish you'd write and tell my son, aged 15, that no real man ever swears or uses profanity.*

Mrs. E.B.H.
Yonkers, N.Y.

You had him—*you* tell him.

● *If you had your choice of a head-on collision at 50 mph or going over a cliff, what would you do?*

P. L. Regan
Nashville, Tenn.

Faint.

● *My present high-priced car is a dog.* (Mr. Wright then gives out with a long list of repairs.—T.M.). *At 31,000 miles (and with maybe a lot more of the usual wear-out repairs coming up) I've had about enough. I've considered: (1) trading for a new 3.4 Jag sedan; (2) trading for a new Impala; or (3) keeping the "dog" and spending more money on it. Suggestions, please?*

Ken Wright
WKY-TV
Oklahoma City, Okla.

Shoot the dog. If you want "class" buy the 3.4 Jag; if top transportation is all that you want, then the Impala is a good choice.

● *In Paris pedestrians have no rights at all and there seem to be very few accidents. In Los Angeles and most parts of California the motorist has no rights; in fact, it's so bad you have to sometimes stand your car on its nose when a pedestrian makes a break and starts to run across the street without bothering to look left or right. Any comments?*

Roy O. Talbert
Hollywood, Calif.

With all due respect to Governor Knight, Dick Nixon and Bill Knowland, California has some of the most idiotic traffic laws to be found in any of the 48 states. Just last week an old bag sauntered out in front of me at a snail's pace in Lone Pine, Calif., and I was forced to stand my car on end to avoid hitting her. She got halfway across, changed her mind, then started back. Just before reaching the curb, believe it or not, she changed her mind again and started across once more. This consumed as much time as the average two or three red lights and according to law I had to wait—especially as there was a Highway Patrol car parked just across the street. Walking-sideburns-in-Levis around Hollywood make it a point to stroll slowly in front

[Continued on page 187]

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FREE FOLDERS!
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MILLERS FALLS CO., Dept. MI-3, Greenfield, Mass.

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Runabouts, Cruisers, Prams, Fishing
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[*Continued from page* 185]

of all traffic, holding up cars for blocks, and drivers can do nothing about it. In Paris any self-respecting taxi driver would quickly shave off the sideburns down to the skull—and then sue the pedestrian.

- *What was the tightest spot you were ever in?*

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I was about to take you up until I read the last sentence. My mother is perhaps the World's Lousiest Cook.

—*Tom McCahill*

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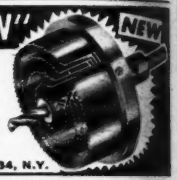

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Silvering

[*Continued from page* 164]

brown like coffee with cream. Tip the tray so you can see the mirror. When the coating of silver seems even and black specks appear, stop rocking the tray and begin swabbing with a large wad of absorbent cotton. Do not apply any pressure. When solution begins to clear, clusters are larger and bloom (haze) begins—*stop.*

Rinse the mirror in distilled water and if there is much bloom, scrub with absorbent cotton with light pressure. Stand the mirror on edge and blot the edges to remove water.

Thoroughly rinse all receptacles. The mud in the silvering solution must be flushed for if it is allowed to evaporate, it will become explosive.

Incidentally, the statement on page 159 of our February issue which reads, "the focal length of a mirror is equal to twice the radius of curvature" is in error. It should read, "half the radius of curvature." Many thanks to those alert readers that caught this mistake and brought it to our attention. •

Pliers

[*Continued from page* 148]

quired form.

Lineman Pliers are the aristocrat of the plier field because of the vital role they play in the electrical power industry. Linemen take pride in the efficiency of this tool and make their selection with particular care. One brand even provides for constant lubrication of the pivot joint by means of a lubricating ring of porous iron which retains a supply of oil. This ring floats inside the joint and releases a supply of oil as the pliers are used, assuring a smooth action.

In some types of lineman's pliers, the base of the cutter head is arranged for use in "breaking" wire insulation by compression and for stripping the wire clean.

Various insulating covers are available for pliers and are recommended for use on all work with electrical wiring.

A common blunder is to use pliers for turning nuts. This is all right if the correct type of pliers is used, so that the jaws are almost parallel when clamping the nut. If ordinary slip-joint pliers of inadequate size are used, the nut becomes chewed so that a wrench will no longer fit.—*R. Treves*

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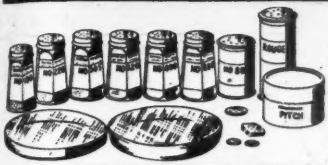

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Up to 576 Power
Complete with Mount, Tripod and 7x Finder

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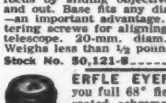

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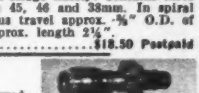

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I was ashamed to always be so tired!

I ALWAYS felt simply "run down". People were thinking of me as a "spoil-sport". I didn't know why until my doctor explained *why* I felt "tired". . . *why* my youthful vigor was slipping away . . . *why* my wife and family were beginning to think of me as a worn-out man. He told me how a vitamin-mineral deficiency in my diet could rob me of the joys of living . . . and suggested that I supplement my diet with pep-building vitamins and minerals.

Well, I put off doing anything about my condition—until one day I sent for a 30-day FREE supply of high-potency Vitasafe C. F. Capsules and began taking one Capsule a day. In a short time, I began to feel like a new man! My pep and vigor came back, I continued with the Vitasafe Plan—and I felt stronger, younger, more energetic!

Today, no one thinks of me as a "worn out old man". I've got pep and energy to burn, and I have fun like a fellow half my age! *And you may too!* Why don't you take advantage of this sensational free offer to see for yourself whether you, too, can again feel peppy and full of life! Mail the postcard *today* and accept this *no risk* offer as I did.

Our fights have turned to kisses!

IT'S hard to believe that my wife and I used to fight. She would start nagging at me the minute I got home from work—dead tired—and I would snap right back at her! We argued and bickered so often that we suddenly realized our marriage was breaking up! There wasn't any real reason for it except that both of us felt so tired all the time that we got on each other's nerves.

Our family doctor gave us some advice that probably saved our marriage. Many people, he told us, become worn-out, tense and short-tempered because their diets do not contain enough vitamins, minerals and lipotropic factors. To correct this condition, each of us started taking Vitasafe High-Potency Capsules—just one a day. It wasn't too long until we had more pep, more energy—and our dispositions improved. Instead of fighting, we were back in each other's arms—just as we were on our honeymoon.

If you or your wife—or some other member of your family—have lost the pep and energy you used to have, you owe it to yourself to try proven Vitasafe High-Potency Capsules for 30 days *at our expense* and judge the results for yourself!

EACH DAILY VITASAFE CAPSULE CONTAINS

Choline Bitartrate	31.4 mg.	Niacin Amide	40 mg.
Inositol	15 mg.	Calcium Pantothenate	4 mg.
dl-Methionine	10 mg.	Vitamin E	2 I.U.
Glutamic Acid	50 mg.	Folic Acid	0.5 mg.
Lemon Bioflavonoid Complex	5 mg.	Calcium	75 mg.
Vitamin A	12,500 USP Units	Phosphorus	58 mg.
Vitamin D	1,000 USP Units	Iron	30 mg.
Vitamin C	75 mg.	Cobalt	0.04 mg.
Vitamin B_1	5 mg.	Copper	0.45 mg.
Vitamin B_2	2.5 mg.	Manganese	0.5 mg.
Vitamin B_6	0.5 mg.	Molybdenum	0.1 mg.
Vitamin B_{12}	2 mcg.	Iodine	0.075 mg.
		Potassium	2 mg.
		Zinc	0.5 mg.
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